

# Open, happy, and creating

*A case study of a Norwegian ICT cluster  
with focus on individuals*

Helene Wiborg



Masteroppgave ved Instituttet for Informatikk

UNIVERSITETET I OSLO

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# Abstract

This thesis is the result of a case study concerning an industrial cluster in Telemark, Norway called IKT Grenland (IKTG). The intention is to shed light on an aspect of clusters that has not been considered important up until now, namely the individuals. The problem statement is: How does IKTG's focus on individuals affect its very development in terms of forming a strong and robust cluster? Here I particularly look at some of the (social and cultural) processes that are going on in the very formation of the cluster. I look at the development from when the cluster managers decided on this strategy, and the effects of that decision in terms of building the cluster.

This is important to take a closer look at in order to provide a fuller picture of what a cluster is. The individual has not been a focus within cluster research and I believe this is a shortcoming as all clusters are ultimately built up of individuals. My goal is not to criticize existing research but to add another element.

The empirical material has been collected through participant observation, semi-structured interviews, document analysis, and participation at a cluster conference. The main result of the study is that the focus on individuals has been a crucial part of IKTG's success. But the large variety of people that became active also caused challenges as they all need to pull in the same direction. By using the analytical concepts "translations" and "boundary objects" I provide insight into how the processes of "negotiation" between individuals happen and how it is possible for them to cooperate and communicate. I also point out the importance of a common culture based on common values, and the leaders' role in both introducing and maintaining the culture. This thesis shows the importance of a clear strategy as a guideline to cluster activities but also underlines that there is a need for dynamism in clusters, in both strategy and structure.



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“Her er ditt vern mot vold,  
her er ditt sverd:  
troen på livet vårt,  
menneskets verd.

For all vår fremtids skyld,  
søk det og dyrk det,  
dø om du må - men:  
øk det og styrk det!”

Nordahl Grieg (1936)

In memory of all the lives lost in Oslo and at Utøya 22<sup>nd</sup> of July 2011





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# 1 Introduction

This master thesis is concerned with industrial clusters and the individuals that inhabit them. A cluster is a group of firms<sup>1</sup> and organizations within the same field and within a geographical boundary, that are linked through vertical or horizontal relationships (Porter 1990). There has been performed a lot of research on clusters and with good reason as Michael E. Porter with this theory provides a possible explanation for why certain nations have competitive advantages within certain industries. But the cluster theory and the cluster model he developed can also be used at a regional level (ibid). Studies show how industries that have cluster properties tend to be more successful than those that don't (Reve and Jakobsen 2001). As I will show in the literature review in chapter 2, other studies focus on industries, firms, nations, and how clusters affect them. This study has a different focus as I look at the individuals who participate in the cluster work and activities. To my knowledge there has not been performed a study similar to this one before. I believe it is a shortcoming in the cluster research that the individuals have not been a focus area. There has been performed benchmarking on European clusters that look at cluster managers (Lämmer-Gamp, Hantsch et al. 2011), but by also looking at individual members I believe we can get a fuller picture of all the elements a cluster includes. The focus for this thesis also shows how choosing a strategy and sticking to it affects the evolution of a cluster. Nooteboom (2006) points out that we know very little about how clusters develop and evolve, and I want to help fill this gap to some extent by providing an empirical example. In order to say something about this topic I have conducted a case study of a Norwegian ICT cluster between May 2010 and August 2011. This cluster, IKT Grenland (IKTG), is located in Grenland, Telemark. At present it has more than 100 member organizations and is still growing (IKT Grenland 2011). This cluster stands out in several ways, but most important for this study is how the managers have decided to not only interact with leaders or managers in the member organizations, but with all individuals who are connected to the cluster. Throughout my research it has become apparent that the focus on individuals has been essential for the cluster's ability to grow and become successful. But to have such a large variety in the type of people involved also means that there are challenges in getting all of them to work together. In analyzing my material I have used the terms "translations" and "boundary objects" as presented by Leigh Star and

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<sup>1</sup> I have chosen to use the word "firm" when translating the Norwegian word "bedrift" because this word is often used by Porter, M. E. (1990). The Competitive Advantage of Nations, MacMillan Press Ltd..

Griesemer (1989). As a researcher it's impossible to overlook the strong and permeating culture that is pertinent in every activity the cluster organizes. This strong group feeling despite of differences intrigued me to also take a closer look at the culture of the cluster which is based on certain values (open, happy, and creating). The managers seem to want all members to internalize and act according to these values.

In the following I will go further into the area of research and give an introduction to the study that I have conducted at IKTG. The research question will be presented, then my motivation for the conduction of the study. My main contributions, methods, and target audience will also be described.

## **1.1 Area of research**

Norway is one of the richest countries in the world and the level of welfare is very high (Reve and Jakobsen 2001). But we need to look to the future to see if Norwegian trade<sup>2</sup> will be able to cover for the future loss in income from oil and gas. At the moment the underlying growth potential in the economy is not strong enough to maintain the level of welfare. Reve and Jakobsen think the only way to change this is to upgrade the Norwegian economy by both strengthening the dynamic in existing industries and by creating new industries with the help of innovation and spin-offs (ibid). Norway needs to transform from an economy based on petroleum to a knowledge-based economy. They further say that if Norway is going to succeed in this it's necessary to attract innovative and highly productive industries. In the reasoning presented by Reve and Jakobsen clusters play an important part. Their argument strikes me as interesting. That is, if clusters can help Norwegian trade and economy it's well worth while to look further into it. In this thesis I provide insight into a successful cluster and what effects the focus on individuals has had on its development. To have an understanding of some of these processes might be useful to other cluster managers or policy makers in performing cluster work or promoting the clustering of industries.

In chapter 2 I will describe in detail what a cluster is with respect to current theories and how the term is used in a variety of ways. The term and the phenomenon were first described by Michael E. Porter in 1990, and he portrays clusters as groups of connected organizations within a certain field: "a geographically proximate group of interconnected companies and

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<sup>2</sup> Translated from the Norwegian word "næringsliv"

associated institutions in a particular field, linked by commonalities and complementarities” (Porter cited in Motoyama 2008:2). Porter (1990) draws up what he calls the “diamond model”, which consists of four determinants. These are: 1) factor conditions, 2) demand conditions, 3) related and supporting industries, and 4) firm strategy, structure and rivalry. These determinants are mutually reinforcing and the systemic character of the “diamond” promotes the clustering of industries. Criticism has been raised against Porter’s theory. Thus, in the literature review I will go further into this and show how, in the cluster literature, the individual is only mentioned as a resource. With respect to current theories on clusters I assert that individuals are important in getting a full picture of all the parts that make up a cluster. It is important to understand not only the processes that happen between firms, but also between people. As I will show in this thesis the “person to person” meetings and the creation of bonds between them is essential in creating the trust that is necessary in order to share knowledge and information. To understand the importance of people connecting as well as firms and organizations can further add value for Norwegian trade as pointed out by Reve and Jakobsen (2001).

The research conducted for this thesis is a case study on the cluster “IKT Grenland”. This cluster is the fastest growing cluster in Norway and is the country’s largest ICT cluster (Terjesen 2010). The cluster is described as follows by Sigurd Kokkervold in an evaluation of IKTG from 2009: “IKT Grenland is a member based interest group where ICT firms, primarily software based, large user environments, research and education actors, and regional development actors can be members” (my translation from Norwegian). In chapter 4 I will go into more detail about the development of the cluster and its structure, but here it is worth mentioning that also in development, IKTG stands out. The cluster was initiated by a few people with a vision and a desire to create something (Terjesen 2010). There were some financial support available, but most of the financial issues were not solved until later when they entered Innovasjon Norge’s (Innovation Norway) Arena program (ibid).

In IKTG’s strategy document from 2010 it is stated that the cluster has one ultimate vision that they are working towards. The vision is to become the most attractive location for software developers in Norway (IKT Grenland 2010 b). As I’ll point to in the analysis, their goals have changed somewhat over time along with their strategy, but the vision has stayed the same throughout the period I have researched (2007-2011).

A cluster that chooses to go beyond member organizations and also focus on the individuals is special and none of my informants have heard about a cluster doing that before. IKTG made a conscious decision to look beyond leaders and contact persons and try to reach all the different people<sup>3</sup> in the member organizations. This makes IKTG stand out. As part of my research I was invited to attend a cluster conference in Copenhagen, and even there I did not encounter any other cluster managers who talked about people when using the word “member”. They all referred to organizations as “members” (from field notes 27/5-11). This, in combination with the fact that IKTG is successful, makes it interesting to ask whether these two things are connected. Such resulted in the following research question, which has been the focus of my empirical study:

**How does IKTG’s focus on individuals affect its very development in terms of forming a strong and robust cluster?**

Here I am particularly interested in looking at some of the (social and cultural) processes that’s going on in the very formation of the cluster. I look at the development from when the cluster managers decided on this strategy, and the effects of that decision. With this research question my thesis brings up the topics of individuals in the cluster and the role they play in making the cluster robust. Further I look at the situation of different people having to work together and the creation of a common culture and identity. In doing this I apply the concepts “translations” and “boundary objects”. By bringing forward my findings on these topics, I want to show how this strategy affects the evolution and development of the cluster. I hope that IKTG’s success story also can be an inspiration to further promote knowledge-based industries and thus be a step towards a more knowledge-based Norwegian economy.

## **1.2 Motivation**

As I will show in chapter 2, the individual does not have a role in the current cluster theories and cluster discussion. The only people I have found to be mentioned as individuals in research on clusters are managers. But clusters consist of so many more, and this study shows that these people can be vital to the success of clusters. This has been the main motivation behind this research, to shed some light on an aspect of clusters that have not been considered important before.

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<sup>3</sup> I use the words “individuals” and “people” interchangeable



It could be a timely question to ask why it is of interest to look at the individuals in a cluster if other researchers have not bothered to do so before. First of all I believe we need to look at IKTG's context and the environment it operates within to understand why this cluster has a focus on individuals. IKTG is located in a region with a limited amount of ICT firms. This makes it more difficult to recruit a large enough amount of participants to meeting places or other activities without looking beyond leaders or people in strategic positions. In order to reach what is often referred to as "critical mass", it needs to get in touch with more people than what is possible by focusing solitary on leaders. But the fact that this cluster is located in an area, and in a country with a relatively small population, means that it needs to be creative and look for ways of doing things that fit their situation. This can help explain why the managers at IKTG decided on a focus on individuals, but even though other clusters aren't in the same situation I believe there are lessons to be learned for cluster managers, cluster members, and policy makers from this case. For example, when you have different types of organizations or people with different backgrounds, you need to find a way for them to pull together. I also want to point out that by including more people in the activities you get a more diverse outlook on possible problems and challenges. Clusters are ultimately made up of people and to understand the processes they participate in, gives a fuller picture of what a cluster is. My intention is not to undermine the existing theories, but to add another dimension.

Another interesting aspect in the case of IKTG is that many of the member firms are small with few employees. In an interview (informant M8, 29/9-10) it was pointed out that for the people working in these firms it is unlikely that they have a professional knowledge environment in the workplace. For them the cluster can provide an invaluable network of people doing the same job as them, but in other firms. If these people can create a forum for knowledge sharing there is a chance that can benefit several firms. In a country like Norway that is dominated by small and medium sized firms (Det kongelige nærings- og handelsdepartement 2011), this types of exchange and cooperation could be of great interest.

Another motivating factor in doing this research is that clusters are a fairly new type of organization, but they are becoming more and more visible. The development of clusters is being put on the political agenda, and their importance is being recognized to a larger and larger degree (Det kongelige nærings- og handelsdepartement 2008-2009). It is also interesting to take a better look at these organizations because industries that have cluster

qualities prosper more than others (Reve and Jakobsen 2001). So far most research that has been conducted on clusters has focused on the advantages of the *firms* that are members of cluster. In many cases the employees in member organizations don't even know they are members (Tor-Arne, interview 25/11-10).

A part of my motivation for conducting a study on clusters is my interest in organizations, how they work, and how they affect the people involved in them. I have a background in organizational sociology, but the cluster is a new type of organization to me. I find the idea of using the competitive advantages in your region to make an entire industry prosper to be innovative and interesting. Sociology also tells me that the individual is important, and that organizations mediate between society and the individual (Thompson and McHugh 2009).

I believe that being a part of a cluster can help firms grow and become more successful but also that how the cluster is structured, what activities they offer, and who are involved should differ according to the context and the industry. To me it is of great interest to see a region that has gone through an industrial transformation over the last years and changed from depending on traditional industry to become a region where the ICT industry now is growing and prospering. People's large involvement and desire to build their region was appealing to me from the very start of the study, and in combination with a group of people who are pleasant and welcoming, IKTG came across as an exciting place to perform my research. Their success and how it came to be, made me want to find answers to if and how the focus on individuals affects the strength and robustness of IKTG.

Finding out that the cluster managers also believe the success is partly based on the focus on individuals motivated me further to look into this aspect. In understanding that this was not researched before I also wanted to find out how IKTG worked in order to provide something of value to all members, and how all the different members are able to cooperate.

### **1.3 Purpose and contribution**

As mentioned the purpose of this study is to shed light on an aspect of clusters that has been in the dark so far, that is the individuals and their role in clusters. Through empirical fieldwork I have been able to determine that the focus on all individuals in member organizations is in fact an essential part of IKTG becoming successful. Further I'll show that in order for people from such different backgrounds, or different "social worlds" (Fitzpatrick,

Tolone et al. 1995), to cooperate, you need to negotiate and find certain ways to make everybody happy. In looking at this I use the analytical concepts of “translations” and “boundary objects” (Leigh Star and Griesemer 1989). I have also looked at “culture” and show how individuals are important both in creating and maintaining a common culture. But in that translation process the managers need to lead. From my study I’m able to state that only a person with authority can transform their own ideas into the basic values of an organizational culture. Further they really need to believe in the values themselves and practice them. At IKTG this is the case as the leaders are great examples of someone who live by the basic values of being “open, happy, and creating”<sup>4</sup> (informant M11, interview 25/11-10). “Open, happy, and creating” is IKTG’s slogan, which is repeated in the logo, in e-mails, and during the meetings (from observation). I chose to use this slogan in the title of this thesis because it captures the essence not only of IKTG, but of the study. I believe that being open to seeing new aspects of clusters can provide new insight and ideas to people involved in clusters, and I hope to show that being different and creating something new is actually what has lead to IKTG’s success. I want to encourage clusters managers and policy makers to be open and realize that just as not all clusters are the same, neither are cluster members. But by letting them bring their differences to the table and working to bring them together seem to be a winning recipe for IKTG. The openness also applies to scholars interested in clusters. I do not want to degrade the existing cluster research, but add another aspect. The larger effects of clusters are important, but ultimately decisions are made by people. This study shows the strength that lies within engaged and hard-working individuals. This case also is a good illustration of the challenges that arises when different people and different organizations need to come together. But it also shows that it is possible to cooperate despite the differences.

## **1.4 Methodology and methods**

For the purpose of this thesis I chose to conduct a case study at IKTG. The case consists of the cluster and its members. In addition I have had one eye on the environment around the cluster; the ICT industry, the Grenland region, and Norwegian industry and economy, to be able to place the cluster within a larger context. I will go further into details on this in the presentation of the case in chapter 4. The case study is an instrumental case study in that I am

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<sup>4</sup> Translated from the Norwegian ”Åpen, blid og skapende”

attempting to draw conclusions that are interesting not only for this specific case, but also more generally. First of all it is important to recognize that the focus on individuals has been essential for IKTG's success. Further I conclude that it is possible for people with different backgrounds to work together and pull in the same direction. But for this to happen they need to know and understand each other. I also make the conclusion that in order to create a common culture leaders play an important role as they need to set an example and base decision on the values the culture rests on. Leaders also need to live by the values themselves and practice what they preach.

The methods used in my fieldwork are participant observation, interviews, and document analysis. These methods go well together and complement each other. I conducted participant observation during IKTG's regular Thursday meetings<sup>5</sup> and in an office environment at Klosterøya where a desk was made available to me during the time of the fieldwork. All interviews were semi-structured and lasted 15-60 minutes. I conducted two interviews with the cluster managers Tor-Arne Bellika and Torkild Follaug, and one with a total of 12 members of the cluster. These people come from different types of organizations and represent different levels in hierarchies from firm leaders to regular employees. I thought it was important to try and get a variety of standpoints but after having conducted the interviews I realize that there might be a bias towards involved and active participants as these people also gave positive responses to my requests for interviews.

The documents that I have looked into for this research were provided, and in part generated, by IKTG's managers. They range from applications for funding to benchmarking reports. These documents have been helpful in providing me with insight into the development of the cluster and also how the cluster is perceived by others.

## **1.5 Target audience**

As this thesis deals with a new topic within the cluster research I hope that it can be of interest to other cluster researchers. I hope that this research will be inspirational, and that it might probe others to also take on the topic so we can learn even more about the individuals' role in clusters.

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<sup>5</sup> These meetings are held once a month. I return to how they are structured in chapter 4

Further, the research might be of special interest to people involved in cluster work in Norway as the environment it operates within seem to be a part of what made the focus on individuals necessary. I hope cluster managers and cluster members can find it interesting to see just how important they are in the workings of the cluster and how the cluster really is a tool for people to use the way they need to. Finally, another part of my audience is policy makers.

In this thesis I look at a cluster where there was a great initiative that came from certain individuals with a certain drive. This type of local commitment and conviction is something I believe financial institutions like Innovasjon Norge (Innovation Norway) need to look for when deciding who should get financial support. I also hope policy makers can see what help IKTG has been for the Grenland region and that it can make them realize that these types of initiatives are important if Norway is going to be able to move into the knowledge-based economy.

## **1.6 Sketch of the thesis**

After the introduction a literature review follows. Here I show how others concerned with clusters and the making of theory haven't been concerned with individuals. I also look at other and related research performed at IKTG and point to some examples of research on Norwegian clusters and knowledge-intensive firms.

Further, in chapter 3, I go through the theories I bring to use in the analysis. I explain the cluster term, the concepts "translation" and "boundary object", and I explain Edgar H. Schein's (2004) theory on organizational culture and how the leaders play a central part in the creation of a culture. I also look to Boas Shamir's (1991) self-concept theory which links identity and motivation. These I find important to bring together in order to fully describe how the focus on individuals affects IKTG's development.

In chapter 4 the story of IKTG is told. Here I give an outline of the structure of IKTG and how the cluster came to be. I also place the case within a context and look into Grenland as a region, the Norwegian economy, and the ICT industry.

In chapter 5 I explain why the case study was the right choice of methodology for this thesis, and I also go into more detail on the methods used. The chapter also explains how the fieldwork was performed, what went well and what could have been done better.

In chapter 6 I analyze and go through my empirical material and show that the result of the study performed is that the individuals have been important for IKTG, but that they also cause challenges. I further show how the challenge of dealing with such a variety of people is solved. Finally I look to culture. I view the process of trying to create a common culture as a translation process, but I also believe that Schein provides us something more. He shows us that culture has several levels and it is challenging to get members of an organization to internalize it. But even if they don't they will see it and they can agree with the values even if they are not able to always act according to them.

I conclude this thesis by summarizing the execution of the study and the most important findings and conclusions. I point to the importance of a focus on individuals for IKTG's success and how the concepts of "translations" and "boundary objects" are very useful when looking at clusters. Their dynamic nature supports the fact that clusters also are dynamic. I look to the importance of a common culture and common values in keeping a cluster together. They provide certain guidelines to a structure that is pretty loose and doesn't have much of a hierarchy. Further I look at where this research stands in relation to other research and literature on the field, and how it contributes to the field of cluster research. I shed light on an aspect of clusters that has not been considered important before. By looking to people and the processes they take part in we get a fuller picture of what a cluster is and how it functions. Lastly, I look to possible future research.

## **2 Literature review**

In this chapter I review related research and topics. I center the review around cluster research, research on IKT Grenland (IKTG), and studies of Norwegian circumstances. I show what focus other researchers have and that my study stands out. In the cluster research the individual is not mentioned as anything other than a resource. Thus, in the following I provide insight into the cluster theory and critiques against it. It has not been possible for me to locate any Norwegian studies similar to mine in that they have a focus on the individual level in an ICT cluster. The focus of my study has been on a micro level (the individuals) and in general there has not been performed much research on this level related to clusters (Nooteboom 2006). This in itself shows that this master thesis is different from most other cluster research, which is concerned with firms, industries, and nations while I look to the individuals and their role in building a strong and robust cluster.

The cluster research presented in this chapter is a theoretical foundation that tells us about what kind of organization IKTG is and what existing theories tell us about them.

### **2.1 Cluster research**

The term “cluster” is used in a variety of ways and not all of them correspond to the original term developed by Michael E. Porter (1990). In order to say something about an organization that calls itself a cluster it is important to understand how the term is used. In this section I look into Porters cluster term and criticisms against it, different types of clusters, how the term relates to Norwegian circumstances and finally how the term is often used in the cluster discussion. A starting point when looking into these aspects is Porter’s definition of a cluster which is a group of firms and organizations, within the same field and within a geographical boundary, that are linked through vertical or horizontal relationships.

#### **2.1.1 Porter’s cluster theory**

Michael E. Porter was the first to introduce the cluster theory in 1990. We need to understand the basic functionality of what Porter calls a cluster in order to say something about how IKTG works as well. Here the highlights of the theory will be presented to also show how the individuals are not considered an important part of clusters. I believe this is a shortcoming and

in the analysis in chapter 6 I will show how the focus on individuals is essential in order for IKTG to be successful. To look at individuals also provide a good example of how people with different goals and different backgrounds are able to work together and pull in the same direction. I believe this is something all clusters face and need to address.

Porter's "The Competitive Advantage of Nations" (1990) contains a huge study of several countries and industries. The study took several years to finish and includes ten nations. The ten nations "accounted for fully 50 percent of total world export in 1985" (Porter 1990:21). Among these are Sweden and Denmark, but Norway is left out. When reading about the study it is not hard to understand why the individual is not mentioned as an important part of the cluster. Porter makes it clear that his focus has been firms and nations, and to understand the process of gaining and sustaining competitive advantage (Porter 1990). The study wants to explain how nations and industries have come to their respective positions in global competition. Porter's aim is "to help firms and governments, who must act, choose better strategies and make more informed allocations of national resources." (Porter 1990:30) When working out the enormous task of conducting the study Porter had more than thirty researchers working on it and he also mentions several cooperating organizations in each of the nations. The work in itself was divided into two parts in each of the nations. First they identified internationally successful industries by using statistical data, published sources, and interviews. With this they created a profile for each nation. In order to explain patterns they looked to the history of competition in particular industries (Porter 1990).

The research conducted for this thesis is very different from Porter's, not only in magnitude, but also in relation to methods and purpose. Where Porter had his focus on firms, this thesis revolves around people. This led to the use of more interviews and observation coupled with document analysis. Looking into how the research was conducted provides understanding for why Porter's model doesn't include the individual, but I believe my study as an addition to the existing cluster research gives a fuller picture of a cluster as all elements then have been researched.

When summing up some of his findings, Porter states that firms will not succeed without basing their strategies on improvement and innovation, a willingness to compete, and a realistic understanding of their national environment and how to improve it. Another central aspect related to success and competitive advantage, is the cluster. The clusters will be the main focus here because this is the type of organization my research has circled around. I



want to show how IKTG has made the individuals into an important aspect. It is also important to remember that even though Porter's study is on a national level he states that the theory can be used at a city, regional or even lower level (ibid). This means that the theory can be related to the Grenland region. Next, I will present what Porter says about clusters. This I do through his own works, but also through the works of Yasuyuki Motoyama (2008), and Reve and Jakobsen (2001).

The content of a cluster can be summarized in two points: 1) elements that make up the cluster, and 2) interconnectedness to produce growth, innovation and competitiveness (Motoyama 2008). The elements are what make up the so-called "diamond model" which consists of four determinants; factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry. These determinants are mutually reinforcing each other (Porter 1990). The "diamond model" is the furthest left part of the figure on the next page.

Porter talks about the clustering of a nation's competitive industries (Porter 1990). These clusters appear to be a central feature of advanced national economies, and the systemic character of the "diamond" promotes this clustering of industries. In these economies there are usually linkages between industries through both vertical and horizontal relationships. We can also see that one successful industry often leads to more successful industries through several mechanisms. Porter (1990) states that you, for example, can see benefits like information, skills etc. flow around the cluster more easily and the cluster "becomes a vehicle for maintaining diversity and overcoming the inward focus (...)" (Porter 1990:151). National industries are able to sustain advantage instead of losing it by being a part of a cluster. But in order to keep the cluster going and promote exchange of information etc. you need trust (Porter 1990). Porter also makes a point out of geographic concentration and how this can increase efficiency and specialization. Trust is an issue I will return to in the analysis because it is an important topic when it comes to making a cluster robust.

Reve and Jakobsen (2001) describe the aspects that lead to the self-reinforcement of the cluster, the so-called upgrading mechanisms; pressure to innovate, complementarities, and scattering of knowledge. Pressure to innovate comes from the combination of closeness to demanding costumers and competition, complementarities are synergies between different actors that complement and reinforce each other, and scattering of knowledge happens because clusters have many and different arenas for communication. Reve and Jakobsen

further state that in an industrial cluster we can expect that all three of the upgrading mechanisms are working. In their model they present how these upgrading mechanisms lead to more profitability which again reinforces the four determinants or the environment around the industry, the cluster. This makes for a reinforcing system.

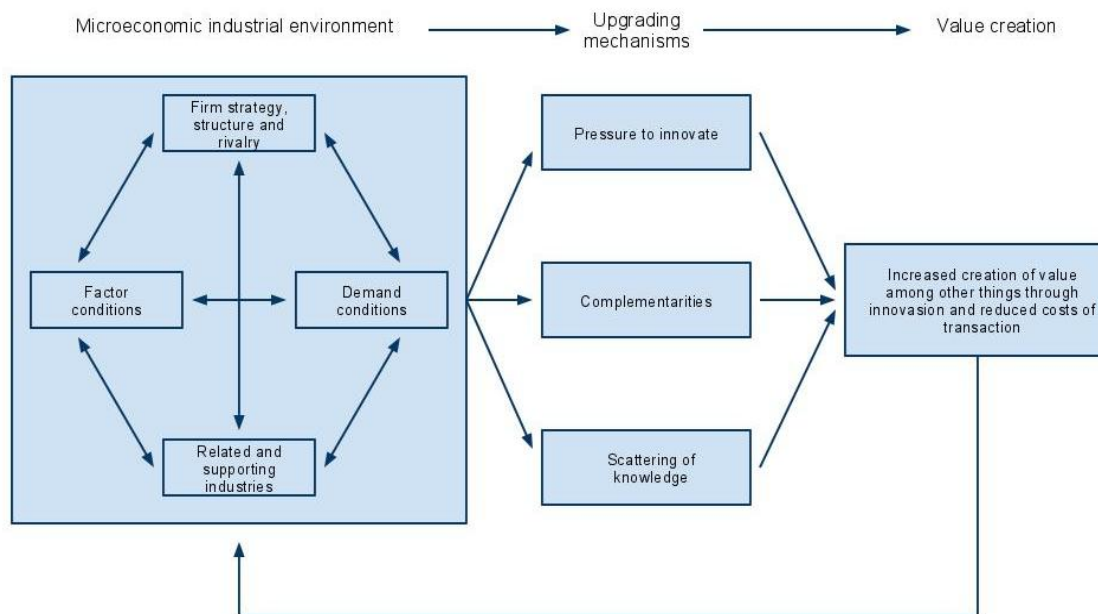


Figure 1 (Author's translation of Reve and Jakobsen's (2001:29) "Figur 2-1")

Reve and Jakobsen (2001) sum up the theory by saying that the essential part is that successful industries are characterized by self-reinforcing growth driven forward by competition, cooperation, pressure to innovate and knowledge-development among firms within relatively small geographic areas. The four determinants are separately important in creating good industrial cluster environments, but to have close interaction between them is just as important (ibid).

As we have seen here the individual does not have a clear position in Porter's theory. He focuses on the firms and nations, and their competitive advantage. In my research I have chosen a different approach than Porter. I only look at one ICT cluster in Telemark, Norway and hope that this case can teach us that the individuals play a role in a cluster. Through this case I show how a strategy to focus on individuals has affected the development of IKTG. But it is also important to understand the cluster model and the mechanisms within it because they say something about the type of environment IKTG operates in. Malmberg and Power (2006) make a strong argument for not conducting any more research on whether a cluster fits into

the model. This is an ideal type and even though no cluster really fits the model it can still be used as an analytical tool and to understand the conditions within which a cluster operates. To get a full picture of the cluster theory the most common criticisms against it is discussed next.

### **2.1.2 Criticisms against the cluster theory**

To get a better understanding of the cluster research and how the cluster term is used, it is important to look at criticisms as well. This can tell us something about what a theory is lacking and give us some clues on aspects we need to consider more carefully when using the theory. In addition it has been important for me to see whether the cluster theory has been criticized for not dealing with the individuals but it has not been possible for me to locate any critique that goes in that direction.

In summarizing the criticisms that have been raised against Porter and his cluster theory I will mostly rely on the article “What Was New About the Cluster Theory?” by Yasuyuki Motoyama (2008). He describes the critiques that have been brought up in the debate about cluster theory. He believes they can be summed up in three main critiques. In the end he brings forward two new ones of his own as well.

The first criticism Motoyama presents is the notion of regional competitiveness and specialization. Porter doesn't make it clear what regional competitiveness is and his idea of regions specializing is not based on evidence suggesting that this leads to higher rate of innovation and economic growth. The second criticism is geographical and industrial ambiguity. It is difficult to draw the geographical boundary of a cluster and this leads to ambiguity at the policy-level. This limitation is one that keeps being brought up when it comes to Porter. The term cluster has been labeled too flexible, for example by Isaksen and Onsager (2004), and they argue that it is difficult to use. The same claim is also raised by Malmberg and Power (2006) and they state that you have to make a decision about where to place the boundaries yourself. The last limitation is presented by Motoyama (2008) is universalism. The cluster theory does not take fully into account the variations in cluster elements, interregional connections and development.

Further Motoyama presents two new critiques of the cluster theory. The first is about how the theory has a descriptive and static nature. Motoyama thinks that the way to overcome this is to also consider the history of the cluster. I agree with Motoyama's reasoning here in that if

we want to learn something from the description of a cluster and be able to reconstruct it in any way we need to know something about its history (Motoyama 2008). We need to know something about how the cluster evolved into what it is today, what the founders have focused on, how people have worked together etc. in order to understand success and/or failure. To overcome this I have looked at documents from IKTG going back several years and I was told the story of the cluster by Torkild in an interview (15/9-10). In addition I have been in contact with the cluster over some time and observed how it is a dynamic organization that keeps changing. I have tried to not give a static image of the cluster, but instead I want to say something about how the cluster has developed. The second new criticism is the practical application of enhancing the interconnectedness of the cluster. The theory does not explain what government can do if firms in a cluster do not have sufficient spillover or synergistic effects. It only states the government should do something (Motoyama 2008).

The critiques have been useful in understanding more about the cluster theory and its shortcomings. In the next section I will attempt to make it clearer what I mean when the term “cluster” is used in this thesis by looking at different types of clusters.

### **2.1.3 Different types of clusters**

As mentioned in the previous section, the cluster term has been labeled too flexible (Isaksen and Onsager 2004). This might be because the word “cluster” has been used about different collections of firms. This section seeks to clear up some of the confusion by differentiating between three systems, agglomeration, industrial cluster and system of innovation (ibid). The intention is to clarify what is meant by “cluster” in this thesis. IKTG falls within the industrial cluster category, which is also related to Porter’s term.

An agglomeration is nothing more than a geographic concentration of economic activity (ibid). It can be both specialized concentrations of industries and concentrations of value chains, and general, heterogeneous industrial concentrations of firms from different industries and value chains. The agglomeration theory sheds light on how industrial concentrations develop, grow and are reproduced (ibid). A dynamic agglomeration is characterized by exchange of information, knowledge based on experience, and technological expertise.

An industrial cluster is a term that is originally related to a functional value chain system. Isaksen and Onsager (2004) relate this term to Porter and say that it consists of a set of

connected and related firms within a value chain system. Porter says that competitive advantage depends on knowledge development and innovation more than on static considerations of comparative advantages. He puts his focus on the interaction between pressure and knowledge development (ibid).

A system of innovation is defined as an industrial system and its institutional apparatus for learning, innovation, and knowledge development. A regional system of innovation demands that there has been established formally organized innovation projects and cooperation between the firms, and between firms and knowledge organizations (ibid). This last aspect is what has led me to base my use of the cluster term on the description of the “industrial cluster” and not “system of innovation” as IKTG has not yet established innovation projects (Oxford Research AS 2011). Referring to an “industrial cluster” means a “diamond” with mechanisms in action, as described by Porter (1990). But Norway was not a part of Porter’s study and therefore it becomes interesting to ask whether this term can still be used when discussing a Norwegian case.

#### **2.1.4 The cluster term in Norway**

This section discusses whether the cluster term can be used to describe or discuss Norwegian clusters. For this purpose I will use an article written by Arne Isaksen and Knut Onsager called “Klynger og klyngepolitikk i Norge – ukritisk modellimport eller relevante perspektiver?” (2004). The article is about the history and background of the cluster term, but they also look into how it has been used in Norway. The term is imported, and they ask whether it is relevant in analyzing and describing Norwegian circumstances and in shaping industrial policies nationally and regionally (ibid).

Their conclusion is that the cluster term is not very specific and this leads to confusion. The term can’t be used in its most original way when applied in Norway because it’s a very different country compared to the countries used when developing the concept. The concept is not useless, but it needs to be adapted to Norwegian circumstances, and when using it we need to be aware of the fact that Norwegian regional clusters often need to look outside the region in order to find all the elements needed to create the type of self-reinforcing system described by Porter (1990). This means that when conducting research on clusters in Norway, you need to be careful when using Porter’s cluster term and be aware of its shortcomings. Isaksen and Onsager (2004) especially point out that using the model uncritically when

developing policies is not a good idea, but that the model is not irrelevant for analyzing knowledge networks, competence development, and innovation processes. I do not use the cluster term as an important part of my analysis, but more as background information in order to understand the circumstances IKTG operates within. In the analysis I will show how the focus on individuals at IKTG has helped them reach “critical mass”. This would have been difficult if they had kept focusing on organizations only. I see this as one way of dealing with the challenge of being located in a smaller region.

Even though there are challenges related to using the term “cluster” in Norway I choose to use it when referring to IKTG. This article is inspirational as it tells me that Norwegian clusters might face challenges that clusters in other countries don’t. But in the analysis I show how IKTG takes on the challenges and by being dynamic and finding solutions that fit them and their participants, they are able to overcome them. To focus on all individuals in member organizations is one of these solutions.

In order to understand how the term “cluster” is most commonly used, I now turn to Malmberg and Power (2006). They describe how the term is used today and what they think about cluster research.

### **2.1.5 “True clusters”**

In the article “True clusters – A severe case of conceptual headache” (2006) Malmberg and Power discuss the cluster term. They conclude with saying that within cluster research there has been too much focus on an ideal type, a “true cluster”, and this has lead the research in what they believe is the wrong direction. In this section I will shortly describe what they define as a “true cluster” based on the way the cluster term is used today and then how their conclusions have been inspirational.

Malmberg and Power (2006) present four “(...) dimensions or defining criteria that should be present for a true, fully fledged, cluster to be said to exist.” (Malmberg and Power 2006:56). The criteria are derived from how the cluster concept tends to be used. The first criterion is spatial proximity. This means that “There should be a spatial agglomeration of similar and related economic activity.” (Malmberg and Power 2006:57). In relation to this the authors state that we can make our own judgment about what we include and where we draw the lines. The second criterion is functional inter-linkage. “(...) activities should be interlinked by

relations and interactions of local collaboration and competition.” (ibid). But how much competition or collaboration do we need for them to be related? This question raises a problem with this criterion. The third criterion has to do with identity, self-awareness and policy action. “There should be some form of self-awareness among the cluster participants and some joint policy action.” (ibid). This means that someone has to identify it as a cluster in order for it to exist. He/she should also give it a name and develop it. The fourth criterion is also the most controversial (Normann and Isaksen 2009). “The cluster should be, in one way or another, successful (innovative, competitive).” (Malmberg and Power 2006:57) This is a criterion that is very hard to measure (Normann and Isaksen 2009) and it also makes for a circular reasoning (Malmberg and Power 2006) because clusters are said to lead to competitiveness and at the same time they are partly defined by competitive success. These criteria are interesting in my research as IKTG fulfills all of them; the firms are located closely together (in Grenland), they are linked together through both collaboration and at times competition, the cluster has a name, is a judicial unit, and it is successful. Both the number of employees, operational result, and value creation have gone up from 2006 to 2009 (Oxford Research AS 2011). This supports my decision to use the word “cluster” in describing IKTG and similar organizations.

Malmberg and Power (2006) state that there has been too much research on whether you can find a “true cluster” in a region. They believe that we should go back to the basics, which means “trying to understand the cluster movement less as a tool for developing regional competitiveness and rather more as a conceptual framework for analyzing the fundamental dynamics, of knowledge creation and innovation in industrial settings (which we all roughly agree is the ground upon which competitiveness grows).” (Malmberg and Power 2006:59) They also point to empirical evidence and with the help of this they conclude that “there seems to be little evidence that organized inter-firm transactions and cooperation characterizes successful firms. At the same time, there is growing evidence that labor market dynamics and social interaction at the level of the individual can play important roles in firms’ and clusters’ knowledge creation processes.” (Malmberg and Power 2006:62)

This argumentation helped me focus my research. I realized that it is not important whether IKTG fits fully into the diamond model, and this will not be a focus in the analysis either. But the term can still be of analytical interest. There may not exist a cluster that fully fits the model, but the model can still be useful in order to gain an understanding and it can be useful

as a tool when looking into a situation in order to understand it better. In the analysis I show how IKTG fulfills the four criteria of a “true cluster”, but that this also causes challenges.

In the conclusion of the article Malmberg and Power (2006) point out that it is more important to look at the strengths of clusters than to only look at what is missing according to a model. The authors think it is about time for cluster research “(...) to move forward on the basis of new questions and hypothesis (...) (Malmberg and Power 2006:63). This has been inspirational for my research as I focus on a new topic within the cluster research area, namely the individuals and how a focus on individuals affects the development of a cluster.

In this section I have provided insight into the cluster theory in order to know more about the basis for the research area. My main finding is that the individual is mainly mentioned as a resource in different industries and not taken into account in existing writing on clusters. This is something I want to explore further in my analysis. In the rest of this chapter I look to other research performed on IKTG, and studies in Norway to show that my research stands out and provides a valuable addition to cluster research.

## **2.2 Research on IKT Grenland**

There has been conducted other research on IKTG and the journal Magma printed an article by Hans Christoffer Aargaard Terjesen (2010) where he discusses IKTG in a leadership perspective. He looks to the leaders and founders of IKTG and shows how they have been extremely important in building up an ICT cluster in Grenland. He also brings up the subject of culture and shows how the leaders are important in creating it. He even says that it is very difficult to separate between the culture and the leaders. Further, he shows the importance of the Thursday meeting and how the feeling of community has been and still is important in the cluster. In conducting his research, Terjesen used many of the same methods as for this thesis. He conducted personal interviews, participant observation, and he had open conversations with many people within the cluster environment. This research is the closest thing to an individual focus I have found while conducting my research. Terjesen does not mention the employees much other than as participants, but he does look to the leaders and their personal involvement. My research deviates a lot from Terjesen’s focus in that he looks to leaders in particular and I look at all individuals and how the focus on individuals affects the cluster’s



development, but his article has been inspiring and helpful in providing information about the history of the cluster.

Other interesting research performed on IKTG is two rounds of benchmarking. The first round was performed by Innovation and Technology and Agency of Kompetenznetze in November 2009 (Terjesen 2010) and more than 60 industrial cluster participated. This resulted in IKTG being the best cluster the German institute had ever measured (ibid). The second round of benchmarking was performed in 2010 by VDI/VDE Innovation + Technik GmbH in Germany (Lämmer-Gamp, Hantsch et al. 2011). The results were presented at the Cluster Excellence conference in Copenhagen in May 2011. In this study IKTG also performed well, but the results also show that they have some areas where they can improve. But this benchmarking focused on the cluster and cluster managers and one cluster manager was the only one interviewed. This research is interesting as background information, but again the individuals in the member organizations are left out. My research shows that in addition to the managers, the people at IKTG make up the cluster and in order to get enough active participants IKTG needs participants from all levels of the member organizations. I also look to the challenges the variety in participants cause and this problem is not mentioned as a part of any of the cluster research presented in this chapter.

The managers at IKTG have been helpful in providing me with documents concerning the cluster. These include an evaluation performed in 2010/11 (Oxford Research AS 2011) and one from 2009 (Kokkersvold 2009), a report written in 2010 (IKT Grenland 2010 a), an application for the Arena program (IKT Grenland 2007), and a strategy document for 2010-2017 (IKT Grenland 2010 b). These documents say a lot about the development of the cluster, how its goals have changed slightly over time, and thus give a lot of insight to how the cluster functions. Even though it is mentioned that there is a high level of activity and a strong commitment to the cluster (Oxford Research AS 2011) the individual focus is not an area of interest. This might be because the evaluations and application to a large degree is meant to say something about how the Arena program is working and there are many aspects that need to be covered.

I have also been informed that the University college of Hedemark <sup>6</sup> is performing research on the effects of IKTG's slogan "Open, happy, and creating" but at the moment this research

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<sup>6</sup> Høgskolen i Hedemark

has not yet published any results (conversations with Torkild and personal e-mailing with Tor-Arne).

In this section I have looked at research on IKTG. These studies primarily focus on the cluster managers and the affects of participating in the Arena program. Next I'll look at studies in Norway that touch upon issues related to clusters.

## **2.3 Studies in Norway**

Arne Isaksen (2004) has researched the clustering of software consultant firms in the Oslo region, and his main goals was to find reasons for the clustering of these firms. Through the article he comes up with several possible reasons and points to the fact that the largest market is in Oslo, that the firms need knowledge spillovers, closeness to customers, and that young firms rely heavily on local buzz (ibid). Even though this study looks to a cluster of firms which operates within the ICT industry, it is very different from the study presented in this thesis. Isaksen defines a regional cluster as a geographically concentration of interdependent firms, but he does not mention a cluster organization at all throughout the article. In this I differ from him, because I believe a cluster should have an organization and a structure that holds organizations and individuals together as well as develops a strategy for the cluster. Isaksen also had a very different approach in collecting data material. He performed interviews with leaders in 14 software firms and a telephone survey where he got answers from 800 firms. Isaksen's focus is on leaders, and he does not mention the employees as anything other than sources of information and knowledge. As we have very different approaches and goals with our studies, and it is only natural that the methods are also different. Isaksen seems to believe that it is best for clusters to be located close to a large city – therefore I find it interesting to look at the context of IKTG and how they have managed to create a successful cluster outside of the capital area. In the presentation of the case in chapter 4 I go into more detail on the region and how IKTG seems to have overcome the challenge of being located in a smaller, less populated area.

Arne Isaksen and Knut Onsager (2010) examined how the place where firms are located affects innovative performance and innovation patterns. The reason why it is of interest to compare their article to my research, is that it concentrates around knowledge-intensive firms in Norway. IKTG also consists of a lot of knowledge-intensive firms as they operate within an

industry where knowledge is the most important resource. Informant M1, for example, said that when you operate in a knowledge-based industry the most important resources walk through the door every morning and leave again in the afternoon (interview 15/9-10). Isaksen and Onsager based their research on a questionnaire and got answers from a large amount of firms (1380 out of 5200). The aim of their study means that it is probably most relevant for them to talk to leaders, but Isaksen and Onsager's research is yet another example of how researcher have been less interested in the individuals and more interested in firms and industries.

Torgeir Reve and Erik W. Jakobsen (2001) published a book about the Norwegian economy, and they looked into several important industries to see whether they have cluster properties. They define clusters as a gathering of firms and organizations that are connected through trade, cooperation, common input factors, infrastructure, and social relations – much in the same as Arne Isaksen (2004). Their goal is to increase the value creation in Norway. One of the industries they studied is the ICT industry. They conclude that the Norwegian ICT industry has weak cluster properties and that this is a problem because it may result in the growth within the industry being lower than the global market growth (Reve and Jakobsen 2001). In my study informants disagree with them on this. Informant M12, for example, says that even though, among others, Reve says there are weak ICT clusters in Norway, he is not sure that the ICT industry needs clusters in order to be successful (interview 18/3-11). Later in the interview he stated that one of the reasons for this is that within the ICT industry it is possible to do a lot of work online and connect with people through the Internet. In relation to the study presented in this thesis, this book is different in that it looks to entire industries and Norway's economy whereas this study looks to one cluster in order to learn something about the individuals who participate. This book is interesting as it says something about the industry IKTG operates within. It is interesting to see that even though Reve and Jakobsen think there are too weak cluster properties in the industry, IKTG is doing well.

## **2.4 Where do I go from here?**

In my literature review I've been concerned with related research and to show how my research stands relative to it. To my knowledge no other research has focused on a similar topic. The literature about clusters concentrates on firms, industries, and nations and how these are affected by clusters, and visa versa. There has also been research on cluster

management and their affects on clusters. Other research explains the competitive advantage of nations/regions, and gives advice to policy makers and cluster managers. This is important, but to get a micro-oriented picture of clusters I believe that individuals should also be brought into focus. That is what this master thesis is trying to show through empirical material.

In the following chapter I go more into detail on the analytical concepts I use in analyzing my material, “translation” and “boundary objects” (Leigh Star and Griesemer 1989), and Edgar H. Schein’s (2004) theory on organizational culture. I will show how these theories can provide insight into the case, and how they are useful in shedding light on how a focus on individuals affects IKTG’s development. These topics are explored further in chapter 6 where the empirical material is analyzed.

# 3 Theoretical chapter

This chapter begins with following the line from the literature review by engaging in theory, and showing how the concepts and theories are relevant for analytical purposes. The theories presented in this chapter are useful in analyzing my empirical material and answering my problem statement. The chapter is divided into three parts. In each of the parts I provide a summary of the most relevant literature and theories and how they are useful for my research.

## 3.1 Translation and boundary objects

This section is about the terms “translation” and “boundary objects” which are used in the article “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907-39” by Susan Leigh Star and James R. Griesemer (1989). I find these terms useful because they can help explain how people with many different goals and backgrounds can still cooperate. To create cooperation is an important part of a cluster and necessary for it to function.

The article by Leigh Star and Griesemer is about the tension between different viewpoints, or “social worlds”, and the need for generalizable findings in scientific work. The authors say that this need creates a tension and to manage it you need translation between the viewpoints. Translation happens through standardization of methods and developing “boundary objects”. Leigh Star and Griesemer define boundary objects this way:

“(…) an analytical concept of those scientific objects which both inhabit intersecting social worlds (...) *and* satisfy the informational requirements of each of them. Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. (...) They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds.” (Leigh Star and Griesemer 1989:393).

Boundary objects are flexible enough so that people with very different viewpoints can all use them, but at the same time they are strong enough so that they don’t lose their meaning.

Boundary objects are useful in this research because people want different things out of the cluster, they have different reasons for attending meetings, sharing knowledge etc. yet they can all talk about the cluster. The word “cluster” in itself is very flexible as we saw in chapter 2. I want to see how boundary objects help bridge the gap between people with different backgrounds and goals and in that way remain strong and robust.

Before moving on to discuss how boundary objects are useful in the analysis of IKTG, it is necessary to take a quick look at the term “translation”. In talking about translation Leigh Star and Griesemer (1989) state that their approach is different from the one of Callon (1986), Latour (1988) and Law (1987) so in this way I do not ascribe to ANT (actor-network theory). The three of them talk about entrepreneurs that “gradually enlist participants [...] from a range of locations, re-interpret their concerns to fit their own programmatic goals and then establish themselves as gatekeepers (in Law’s terms, as ‘obligatory points of passage’).” (Leigh Star and Griesemer 1989:389). This process is called *interessement*. But Leigh Star and Griesemer disagree with their idea that it is enough to talk about one obligatory passage point that all allies need to go through. They want a many-to-many mapping with several passage points (Leigh Star and Griesemer 1989). This means that we get several processes of translation that result in several passage points. The term translation is important in my research as these processes are necessary for the cluster to function. If people can’t come together and agree on anything, the cluster will not be able to serve its purpose. I believe that an important part in the work to make a cluster strong is translating between different viewpoints and in the end creating boundary objects.

By using the concepts “boundary object” and “translation” I want to explore how people with different backgrounds and different goals are able to pull in the same direction and create a successful cluster. As we saw previously, arenas for communication are important in a cluster. This way information can be spread out through the cluster more easily. I believe these arenas are interesting in relation to the concepts also. Firstly, arenas for communication are also arenas for translation. Secondly, the concept of boundary objects tells us something about how it is possible for people to actually communicate about the same things even though their intentions and viewpoints are different.

In the previous chapter I made it clear that the focal point of my research has been the individuals in a cluster and with these two concepts this is possible. As I will show in Chapter

6 individuals can make translations happen and in that way try to gain consensus around their own viewpoints. In this way the term fits well with my intentions and the purpose of the research.

Leigh Star and Griesemer (1989) believe that in addition to creating boundary objects, the standardization of methods was a way of translating between different viewpoints in the case of the natural history museum. That meant all allies could get something out of using the same methods without having to give up too much. Standardization of methods will probably happen in most organizations that have a task they need to perform. IKTG is no exception. In the museum case the methods are viewed as a boundary object. In my case the standardized way of doing certain things is viewed more as an example of a way of conceptualizing a common culture or identity. Culture and identity as a way of keeping the cluster strong and as cluster guidelines will be discussed in the analysis. There I also show how the internalization of a common culture can be seen as a translation process where leaders are change agents. The terms “culture” and “identity” will be discussed later in this chapter.

## **3.2 Co-location**

This section is about co-location, or geographic concentration, and will be related to the topics of culture and identity. Co-location is central in the cluster theory in relation to flow of information etc. I also find that at IKTG being located close together can lead to a greater degree of internalization of a common culture. In looking at co-location the views of Porter, and Reve and Jacobsen will be looked into.

Michael E. Porter (1990) talks about geographic concentration and relates it to the “diamond model” that was described earlier in this chapter. He states that in internationally successful industries you will often find geographic concentration “because the influence of the individual determinants in the “diamond” and their mutual reinforcement are heightened by close geographic proximity within a nation. A concentration of rivals, costumers, and suppliers will promote efficiencies and specialization.” (Porter 1990:157). Further he goes on to saying that geographic location is even more important when we look at improvement and innovation. Porter describes how being located close affects rivals, universities, suppliers, sophisticated costumers, and attraction of talent and how this will in the end lead to innovation and improvement. This is not directly linked to clusters, but later in his text Porter

writes that the "process of clustering, and the interchange among industries in the cluster, also works best when the industries involved are geographically concentrated" (ibid).

Reve and Jacobsen (2001) also discuss the topic of co-location. They look into whether co-location is necessary for firms to get self-reinforcing growth. They point to research which show that innovations, knowledge, products, and concepts are spread faster in firms' vicinity. This is because there are more arenas for communication, and the mobility of employees is also greater when firms are co-located. The authors consider pressure to innovate to also work best in firms which are co-located. In general, we find that Reve and Jacobsen want firms to be located as close together as possible. They believe that the closer together firms within an industry are located, and the tighter the knowledge connections between the firms are, the greater the likelihood for the upgrading mechanisms to come into play.

I believe looking to Porter first is a good way to start when discussing topics related to clusters. This can be said to be the original source of information on the topic. In this thesis the main goal with looking at co-location is to see how it relates to the individuals in the cluster and to the internalization of a common culture. I believe that being located close together can help create stronger bonds between people and that this also affects the strength of the cluster. In the analysis in chapter 6 I also show how it seems that people located closer to other cluster members and the cluster managers seem to have internalized the common culture to a larger extent than those located further away. The next section deals with the culture, identity, and motivation and the theories about these topics.

## **3.3 Culture, identity, and motivation**

### **3.3.1 Culture**

Culture is a fuzzy term that can have many different meanings and it can cause confusion to start using the term without making clear what is meant by it. In this thesis the use of the term relies on the definition presented by Edgar H. Schein (2004). His formal definition of culture is:

*"a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaption and internal integration, that has worked well enough to be considered*



*valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.” (Schein 2004:17)*

This definition is based on groups as carriers of a culture. According to Schein (2004) a group is one that has a shared history, but not all members need to have been a part of the entire history. The boundaries of the group are usually set by the leader. In the case of IKTG the group can be said to be the cluster organization, all its member organizations, and all individuals employed in member organizations. The theory looks at the group at different stages in its development and can therefore be interesting no matter what stage a group, or organization has reached. The main aspect that makes the theory useful for this research is the connection Schein makes between culture and leaders. He believes that you cannot define either one of them alone because cultural norms will define leadership and it can be argued that the only thing of real importance to a leader is to create and manage culture (Schein 2004). This theory can help explain how leaders and their work to create a common culture are important in keeping a cluster together and making it strong. I also see the common culture and its values as guidelines to cluster members as they say what the basic values of the cluster are. The rest of this section will present the most relevant parts of Schein’s theory about leadership and culture.

Schein makes things more clear by defining three levels of culture; artifacts, espoused beliefs and values, and underlying assumptions (ibid). Artifacts are all the phenomena that one sees, hears, and feels when encountering a new group with an unfamiliar culture. They include the visible products of the group. Further, Schein’s theory states that in a formal group one individual creates the group or becomes the leader. If he/she suggests an approach to a problem and this is a success, the leader’s value will be transformed first into a shared value or belief and ultimately into a shared assumption. But only the beliefs and values that continue to prove themselves as valid will become assumptions (ibid).”Basic assumptions (...) have become so taken for granted that one finds little variation within a social unit. This degree of consensus results from repeated success in implementing certain beliefs and values (...)” (Schein 2004:31). For an observer it is not easy to spot the underlying assumptions and these are also hard to implement or change (Schein 2004). The culture is built on a set of common values and they provide guidelines for all members. These values are carried by leaders, and I believe the internalization of culture can be seen as a translation process. I go further into this in the analysis.

The connection Schein makes to leadership is also of interest for this research because one of the conclusions is that the individuals in charge of the cluster are important figures in order to keep the cluster strong. They are role models and live by the same values as they preach. They have created the organization and the culture consciously and this theory can help shed some light on how this happens. What Schein makes clear in his text is that it is the beliefs, values, and assumptions of the leaders that create a culture. In order for these assumptions to become so-called “underlying assumptions” in the group, two things need to happen. As previously mentioned, acting on a leader’s assumptions need to result in success, and secondly the leaders need to be consistent (ibid). This means that the leaders need to communicate their assumptions in all aspects of their behavior. Schein lists six primary embedding mechanisms. These work simultaneously and they “are visible artifacts of the emerging culture and they directly create what would typically be called the “climate” of the organization” (Schein 2004:246). The mechanisms are; 1) what leaders pay attention to, measure, and control, 2) how leaders react to critical incidents and organizational crisis, 3) how leaders allocate resources, 4) deliberate role modeling, 5) how leaders allocate rewards and status, and 6) how leaders recruit, select, promote, and excommunicate (Schein 2004). These mechanisms can interact and reinforce each other, but if the leaders are not consistent it will cause confusion among the subordinates which can result in, for example, countercultures. Further, Schein (2004) talks about six secondary articulation and reinforcement mechanisms. These are; 1) organizational design and structure, 2) organizational systems and procedures, 3) rites and rituals of the organization, 4) design of physical space, facades, and buildings, 5) stories about important events and people, and 6) formal statements of organizational philosophy, creeds, and charters. In a young organization, these last six mechanisms are cultural re-enforcers while in a mature and stable organization they are primary culture-creating mechanisms. But IKTG is a growing organization as it keeps getting more members. Then they are secondary because they only work if they are consistent with the primary mechanisms. They can build organizational ideologies and formalize much of what is informally learned in the beginning (ibid). These twelve mechanisms are interesting in my research as they can tell us something about how a strong common culture can be maintained, and thus create a stronger cluster. This will be discussed further in the analysis. But it is also interesting to look into identity and motivation. The three terms are closely related and often discussed in relation to each other. Together they might be able to say something about how it is possible to get people to spend time doing cluster work

without pay. Next we will look into Boas Shamir's self-concept theory and how it links identity and motivation.

### 3.3.2 Identity and motivation

Boas Shamir (1991) gives us insight into the self-concept theory of motivation. This theory may help us understand why some people feel motivated and are willing to do a lot of work without getting paid to do it, and how the prospect of making money is not the only thing keeping the cluster together. In order to make it clear what the theory is and where it can be applied, Shamir presents us with the five motivational assumptions the theory rests on.

1. Humans are not only goal-oriented but also self-expressive
2. People are motivated to maintain and enhance their self-esteem and self-worth
3. People are also motivated to retain and increase their sense of self-consistency
4. Self-concepts are composed, in part, of identities
5. Self-concept based behavior is not always related to clear expectations or to immediate and specific goals

Figure 2 (Shamir's five motivational assumptions Shamir 1991:411-413)

The main point of the article is that "job motivation is determined by the level of congruence between the job (and its context) and the person's self-concept" (Shamir 1991:416). This means that the more a person feels that the job identity is also present in his/her self-concept and the more the job will enhance self-esteem or the feeling of self worth, the more motivated the person will be (Shamir 1991). People have more than one identity and these are organized in a hierarchy of salience. "(...) the higher the salience of an identity within the self-concept the greater its motivational significance" (Shamir 1991:413). The relation between motivation and identity can possibly help say something about how important it is to have people embrace their identity as a cluster member and thus place it high in their identity hierarchy. A common identity can also help create stronger bonds between people which again affect the strength of the cluster. Just like with the creation of a common culture, the creation of a common identity can be viewed as a translation process. In the analysis I will look into "identity" and whether it plays a role in explaining the eagerness to help and volunteer at IKTG.

The self-concept theory is most applicable in certain situations and for certain people. Shamir states that there are three conditions under which the theory applies; 1) goals are not clearly

specified, 2) means for achieving goals are not clear or not established, and 3) external rewards are not clearly related to performance (Shamir 1991). In the analysis I show how the informants have different understandings of what the goals of the cluster are. The cluster also operates with one vision but several goals. So it can be perceived as goals not being clear. The way to reach the vision and the goals are not always clear either. Informants talk about cooperation and value creation, but the link between the activities and the vision and goals is not clear. IKTG also fulfills the third characteristic as there is no guarantee for the people or firms being most active to also be the ones to get the most in return business wise.

The theory is most applicable to people who are “expressive” and “moral” individuals. Shamir also believes that the theory is less applicable to people with less self-esteem (ibid). In the analysis I will discuss whether the theory applies to IKTG and whether identity has played a part in creating a robust cluster.

## 4 Presentation of case

In this chapter I describe the case: the cluster IKT Grenland (IKTG). I have chosen to place the boundary of my case around the cluster organization, its member organizations, and the individuals employed in the member organizations. The reason for conducting a case study was that IKTG presented itself as an intriguing case. The cluster seemed to be quite successful and that was my first point of interest. The goal before heading out in the field was to find out something about the relationship between the cluster and the individuals who are members. I felt this could be best explored through a study of a single case where the individuals had been a focus.

To give a full picture of the cluster I will firstly describe the structure of the cluster, how it is built up and the Thursday meeting which is held the last Thursday of each month. Secondly I describe IKTG's development from the start in 2001 and up until today. Further, I get into the fact that IKTG is located in Grenland and what this means for the cluster. To also place the case in a context, I will say something about the Norwegian economy and the ICT industry.

### 4.1 The structure of IKT Grenland

IKTG is described by other researchers as an interest organizations consisting of different types of member organizations: "IKT Grenland is a member based interest organization for ICT firms, larger user environments, research and education actors, and regional development actors in the Grenland area." (Oxford Research AS 2011:12, my translation from Norwegian). These different types of members are described by cluster managers as the triple helix: firms, public actors, and academia (Tor-Arne, interview 14/9-10). You can also include investment environments, but then you call it a quadruple helix (ibid). Even though the member organizations are different ranging from one-person firms to colleges/universities and local governmental departments, they are all equals within the cluster (Torkild, interview 15/9-10). At the moment there is no differentiating between members, but the cluster has defined their core members as software developers (ibid).

The cluster organization in itself is a judicial unit, like a foundation, which means it is a non-profit organization (Tor-Arne, interview 14/9-10). There are no employees in the cluster organization. All personnel are hired consultants which makes it possible to adjust the

administration costs according to the financial situation (Torkild, interview 15/9-10). But IKTG also relies on volunteer work, and they will still need that in the future (Torkild, interview 25/11-10). The general management consists of Torkild, the general manager, and a set of project managers, among them Tor-Arne (Tor-Arne, interview 14/9-10). In addition there is a board which consists mostly of representatives from the firms but also from public actors. The highest authority at IKTG is the annual general meeting<sup>7</sup> (Torkild, interview 15/9-10).

The main activity at IKTG is the Thursday meeting which is held the last Thursday of every month in the cantina/restaurant at Klosterøya. The meeting is built up the same way each time starting with a little time to mingle before someone from IKTG presents what is going to happen that night and welcomes everyone (Terjesen 2010). Then there is a main session that lasts for about 45 minutes. This session consists of an invited speaker talking about something that can be of general interest to all participants. Later the participants can choose between different forums according to their professional fields or personal interests. There is a set of regular forums, but it varies how many of them have a program planned for each meeting (ibid). When the forum session is over there is time for mingling and socializing often in combination with eating pizza or other food (from observations at meetings).

The goal with me participating at these meetings was to see and experience the meeting place<sup>8</sup> first hand<sup>9</sup>. To understand this arena is a huge part of understanding what goes on in the cluster and how it works. You need to have been there to fully understand the atmosphere and the positivity and openness that identify it. The Thursday meeting is central to the functionality of the cluster as it's the main physical meeting place for members and this is where much of the networking and social mingling happens. This is much of the purpose of the meeting as was explained by Tor-Arne (interview 14/9-10). The managers want to facilitate "random" meetings that hopefully can lead to cooperation and knowledge sharing without having to go through the management (Torkild , interview 15/9-10).

During the Thursday meetings IKTG's slogan, or basic values, are strongly promoted. The slogan, "Open, happy, and creating", is repeated on posters, t-shirts that are given out to the

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<sup>7</sup> Translated from the Norwegian "generalforsamling"

<sup>8</sup> Translated from the Norwegian word "møteplass"

<sup>9</sup> The Thursday meeting is not the only meeting place the cluster has but it's the most stable one and the one that's most visited.

speakers, and they are often repeated out loud several times. These values also permeate the way the managers appear and the atmosphere they are trying to create. I will go more into detail on this in the analysis where I will point out the importance of the Thursday meeting in solving several of the challenges the cluster faces.

In addition to the Thursday meetings a weekly e-mail (or blog) is an important channel for promoting the slogan and the values. This is also a way to let people know what goes on in the cluster, both good and bad. At the moment IKTG is also using the social networks Facebook, LinkedIn, and Twitter, but they are mostly used as information channels in order to get people to attend activities. Even though there is a lot of knowledge about social networks among the cluster participants, it has not been used to its fullest potential as of yet<sup>10</sup>.

In the following I will look at the history of the cluster and how it has developed from the start in 2001 and up until what it is today.

## **4.2 The development of IKT Grenland**

IKTG started with the initiative of a local IT entrepreneur who contacted Vekst i Grenland (ViG)<sup>11</sup> because he wanted to form a business community for the IT firms in the region (Terjesen 2010). He was then connected to Torkild Follaug, and with some financial help from ViG they conducted a preliminary project on how to get a hold of the IT environment and build a meeting place (Torkild, interview 15/9-10). The study was finished in January 2002 and the firms that had been mapped out were invited to join a network they called "IKT Grenland". 22 firms decided they wanted to take part (ibid). The first few years the network was organized as a project under ViG. But in 2007 they applied for funding from Innovasjon Norge<sup>12</sup> through the Arena program. The Arena program is one of the two large cluster programs run by Innovasjon Norge (Oxford Research AS 2011). The task of the program is to offer financial and competence support for carrying out three-year developmental programs,

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<sup>10</sup> The e-mail and the social networking sites have several functions in the cluster at the moment but I also think it could be interesting to if a CSCW (computer-supported cooperative work) system or another technological tool could be helpful in making the cluster even stronger. I get back to this when I discuss future research in chapter 7.

<sup>11</sup> The regional company for industrial development (Vekst i Grenland. (2011). "Vekst i Grenland." Retrieved 01.07, 2011, from [www.vig.no](http://www.vig.no). )

<sup>12</sup> Innovasjon Norge contributes to innovation within business, development in the districts and competitive Norwegian firms (Innovasjon Norge. (2011). "Innovasjon Norge." Retrieved 01.07, 2011, from [www.innovasjon Norge.no](http://www.innovasjon Norge.no).)

and to give competence support in order to prepare for these types of projects (ibid). IKTG received funding for three years and in the fall of 2010 they got financing for a forth year (Torkild, interview 25/11-10). As mentioned, the financial situation is challenging for IKTG. In addition to the financial support from Innovasjon Norge and the membership fee, the cluster relies on volunteer work (ibid).

In the following I will look to the contexts IKTG operates within. I will look at what it means to be located within Grenland, and further I will also look to the Norwegian economy and the ICT industry.

### **4.3 Grenland**

The geographical focus of the cluster is the Grenland area in Telemark, Norway. This is the fifth largest urban area in Norway and has approximately 100 000 inhabitants (Tor-Arne, interview 14/9-10). This area has an industrial history that stretches over 1200 years back (IKT Grenland 2010 b). Traditionally, the industry was based on processing physical raw materials, but energy based industry took over about 130 years ago. The past 15 years the knowledge-based industry has become more important (ibid) and IKTG wants to change the regional identity from being about traditional industry to be more about knowledge-intensive industry, like ICT (Torkild. interview 15/9-10). It seems like the transition has gone well considering that Telemark is the county<sup>13</sup> in Norway with the largest growth in the number of employees within the IT industry (Tor-Arne, interview 14/9-10).

The ICT industry in Grenland is dominated by small firms. A statistic presented to me by Tor-Arne, shows that in 2010 the 38 core firms at IKTG had 362 employees, up from 295 in 2006. This adds up to about 9.5 employees per firm. This is quite low and corresponds with the numbers from the rest of the Norwegian ICT industry. Infosector AS (2011) shows that in 2009 3982 out of 5952 firms in the ICT sector had 0-1 employees. To have many firms with few employees means that a cluster can provide a professional environment for people who do not have that in the workplace. The knowledge sharing within the different forums is an important part of that. This opportunity to find a professional environment may be why IKTG succeeded in involving a large number of individuals in the cluster activities. I will get into this topic further in the analysis in chapter 6.

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<sup>13</sup> Translated from the Norwegian "fylke"



## 4.4 Norwegian economy and the ICT industry

In chapter 1 I described how the Norwegian economy is said to need a change from depending on petroleum to become more based around knowledge-intensive industries. Grenland is a region that has gone through the transition and come out well. As mentioned in the literature review in chapter 2, Reve and Jakobsen (2001) say that clusters play an important part in the development of Norwegian economy and that the ICT industry in Norway doesn't have strong cluster properties.

An interesting question to ask is whether the ICT industry needs strong cluster properties as a lot of cooperation and work can be performed online. Informant M12 made it clear during our interview (18/3-11) that he doesn't believe clusters are as important to the ICT industry as to others. He has seen a lot of small Norwegian ICT firms do well without ever being a part of a cluster environment. He also believes that by using only local resources it will be almost impossible to be successful internationally and that firms therefore need to look beyond their local environment anyway. During the spring of 2011 IKTG has made connections with two clusters in Sweden/Denmark in order to both help their members make connections internationally but also to attract more knowledge to Grenland (from weekly e-mail). During an interview Tor-Arne (25/11-10) stated that internationalization is an important part of their focus at the moment, and with this new cluster-to-cluster cooperation things are starting to happen. But if the ICT industry has so many opportunities to connect and cooperate online, are clusters necessary? I would say that they are. As I pointed out earlier they are good ways for letting employees become a part of a larger professional environment, and as M12 (interview 18/3-11) pointed out you always need competence and capital. In order to draw those things towards you, clusters are good (ibid). The number of employees, operational result, and value creation went up at IKTG between 2006 and 2009 (Oxford Research AS 2011). This indicates that the cluster participation has had a positive effect on not just the people and their professional development, but also business wise for the member firms. I will not go further into this question in this thesis, but see it as an interesting one to ask. There might be differences between industries and this could be a topic for future research.

So far, we have seen that IKTG is located in a relatively small region in Norway. This means that the number of potential members is also smaller. In order to overcome this challenge the cluster managers have decided to interact with all individuals in the cluster, and not just

leaders. In the literature review in chapter 2 I also pointed out that Norwegian clusters often need to look outside their region in order to find enough costumers and partners (Isaksen and Onsager 2004). We have seen that IKTG is also doing this by connecting to clusters internationally in order for their members to have more options for both cooperation and selling their products. The cluster is also cooperating with other clusters nationally as well as colleges/universities in other regions. Involving members and being willing to look outside their own region can be some of the factors as to why IKTG has become successful. In the analysis I will go further into what affects the focus on individuals has on the strength and robustness of IKTG.

In this chapter I have described the structure of IKTG and how the Thursday meetings are organized. To not give a static image of the cluster I have also looked to the historical development and showed how certain individuals got the ball rolling. Further I have placed the case in a context by looking to Grenland, the Norwegian economy, and the ICT industry. In the following chapter I explain in more detail why I chose to do a case study and how I generated my material.

# 5 Methodology chapter

In this chapter I go through the methodology and methods chosen for this study. It begins with an explanation of the case study methodology and in what way this approach was fruitful for conducting this study. Secondly the methods used will be explained. This includes how they have supported the execution of this research and how they work together. Lastly, I will go into the ethical considerations in relation to the study.

## 5.1 Case study

A case study is a methodology “defined by interest in an individual case” (Stake 2005:443) and what can be learned from the case. This means that the researcher needs to stay focused on the case while out in the field or performing other types of inquiries about the case at hand. But even though the focus is on a single case, the purpose of the study can be to illustrate a larger issue, or draw more general conclusions (Stake 2005).

There are three types of case studies (ibid). The intrinsic case study is when you are trying to get a better understanding of one specific case. With this type of study you don’t try to illustrate a problem or an issue, but the case is interesting because it is ordinary or particular. The intrinsic case studies often begin with a case already identified (ibid). The second type is the instrumental case study. Here the researcher wants to draw some conclusions about a larger issue based on what he/she finds out about the case. The case then plays a supporting role in the researcher’s investigation and search for understanding (ibid). The last type is the multiple case study. Then you look into several cases in order to say something about an issue or a topic. There is no rule about whether the cases should be similar or different but you should choose a collection of cases that can give you the best understanding. Instrumental and multiple studies normally require cases to be chosen (ibid).

The study presented here is an instrumental case study. The focus has been on IKTG and its members throughout the fieldwork, but I want to say something more general about clusters and the relationship between them and individuals, in addition to look at some of the social and cultural processes in a cluster. The goal with this has been to say something that can inspire other people involved in cluster work by focusing on something other researchers seem to have overlooked, namely the individual. This will hopefully provide more insight into

how a focus on individuals influences the strength of the cluster. There are disagreements about whether a case study and the knowledge it provides is of any importance, but Bent Flyvbjerg (2006) provides good arguments for why this is a misunderstanding that needs to be corrected.

Flyvbjerg (2006) claims that context-independent knowledge is not necessarily better than concrete, practical knowledge. His argument is that case studies can provide knowledge which is important for people to develop into experts on a field. He states that a true expert “(...) operates on the basis of intimate knowledge of several thousand concrete cases (...)” (Flyvbjerg 2006:391). He continues by saying that predictive theories can’t be found in the study of human affairs. As a result, context-dependent knowledge is more valuable.

When you want to say something about a topic, the selection of your case is of great importance. It is important to select a case that will be able to provide you with the best information possible. When IKTG became the focus of my attention it was mainly for two reasons. Firstly, it was available. This was a place where I met open and helpful people who were more than willing to provide me with the information and help that I needed. Secondly, IKTG seemed to be a successful cluster. This was an impression I got from reading evaluations (Kokkersvold 2009; Oxford Research AS 2011) and also from a preliminary conversation with Tor-Arne.

IKTG’s focus on individuals was also a topic in a preliminary conversation and the decision to make this the main topic for my research was taken shortly after. When I started to interview different people in the cluster I got to understand that the focus on individuals makes IKTG stand out from other clusters. Most industrial clusters don’t have this way of thinking. This means I have an extreme case (Flyvbjerg 2006). This might have been a stroke of luck, but has proved to be of great fortune. The fact that IKTG stand out from the pack provides me with more interesting information about the topic at hand. Flyvbjerg (2006) supports the selection of an extreme case. He believes that a representative case might not be the richest in information and that it seldom will be able to produce insight that can clarify the deeper causes behind a given problem and its consequences (ibid).

When looking into a case it is good to be aware of its location within several contexts and its history. Stake (2005) states that historic context almost always is of interest, but other contexts might also be interesting to look into, such as cultural and physical context.

Researchers are free to choose not to look at contexts, but most do and I believe it adds to the research. We have also seen that there is a lack of knowledge about the development of clusters. I used document analysis and interviews to get information about the development of IKTG as described in the previous chapter. The documents that I have had access to are evaluation reports, applications for funding, strategy documents etc. In the presentation of the case in chapter 4 I also looked at other contexts around IKTG, the geographical region, the Norwegian economy, and the ICT industry.

## 5.2 Methods

The choice of what methods to use during a case study is up to the researcher and the situation at hand, but observation, interviews and document analysis make up a good combination. Stake (2005) says that what the researcher is not able to see during observations is obtained through interviews and documents. Norman K. Denzin and Yvonna S. Lincoln (2005) say that the case study relies on interviewing, observing, and document analysis.

Observation was performed during IKTG's regular Thursday meetings in September, October, November and March and during visits to IKTG's offices at several occasions. The office visits were originally planned in order to perform interviews but it was possible to get access to a desk in an office environment at Klosterøya<sup>14</sup>. Klosterøya is an industrial location<sup>15</sup> in Skien where IKTG and several of their member organizations are located. The interviews have been the main part of the fieldwork, and most of the insights have come from them, also in combination with observation. Document analysis has been important in order to find out more about the context IKTG operates within and also to learn about the development of the cluster. By using these three methods I have collected a host of data material which supplement each other and allows me to see patterns. The data collected through fieldwork is presented and applied in chapter 6. Next I go more into the methods and how they were used in the research process.

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<sup>14</sup> Klosterøya used to host a large factory but since Union was shut down in 2006 is has been turned into an industrial location. More or less 70 businesses employing more than 350 people are located here (Klosterøya AS. (2011). "Klosterøya AS." Retrieved 8/4, 2011, from [www.klosteroya.no](http://www.klosteroya.no).)

<sup>15</sup> Translated from the Norwegian "industri park"

### 5.2.1 Observation

In this section I describe what role was taken during the observations and how this method was useful in the research. I will also describe in more detail the activities observed.

When performing observations you can take on different roles. You can be a passive or a participant observer. If you are passive, you are supposed to act as a “fly on the wall” (Blomberg, Giacomi et al. 1993) and be as unobtrusive as possible. To be a participant observer means that normally you will participate fully in the activities studied (ibid). When you are participating this way it is also possible to talk to people, ask questions and maybe get a better understanding of what is really going on in that particular situation. For this research the observation leaned more towards participant than passive. This has many implications and can cause difficulties. One example is that taking notes while fully participating can be a challenge (ibid). Note-taking was not a huge priority for me during observations, but in the situations where it was attempted to take notes a few challenges occurred. Trying to take notes during the Thursday meeting proved to be challenging as most other people were not taking notes and it made me stand out. Participants also sit very close together at these meetings, and it was easy for other people to read the notes. It didn’t feel comfortable and restricted the note-taking. It would probably have been a good idea to take notes after the meeting or after a day at the office, but the long days were often tiring and often resulted in notes not being taken. In hindsight it became clear that taking more notes while being out in the field might have provided even more information and made it easier to remember specific situations.

Blomberg et al. (1993) describe how it’s important to have a focus for your observation and for this case it was for the most part an “event focus”. The routines and ways people interact is also a type of event and resulted in information it would have been difficult to get access to otherwise.

At the office many people noticed that there was a visitor present who was working on a master thesis about IKTG. Occasionally people would ask if I was a new tenant in the office, but then the real intentions for the visit were explained. How informants describe the normal environment seems similar to my experiences. At Thursday meetings not all participants were aware of a researcher being present, but on a few occasions it was pointed out. The fact that

participants were not informed doesn't strike me as a problem, because these meetings are open to many people and participants will often see new faces.

Blomberg et al. (1993) say that you will often move between the two types of observer roles and you don't need to choose one of the two extremes. Even though the observation was more participant than passive it has not gone so far as to fully blend into the environment and become a part of it. It was natural to take on a participant role at the meetings and as a visitor in the office, and the presence was legitimated. It was also possible to use the time in the field to get access to more informants. Staying in the office made people aware of me, and on at least two occasions people agreed to an interview after having met me in the office.

The observations have for the most part helped with an understanding of some of the activities that happen at IKTG. Being a part of the office environment made it possible to see what goes on every day and it made a good reference point in the interviews. In combination with attending the Thursday meetings observing at the office helped me get a feel of the atmosphere of the cluster and its different meeting places. It would not have been a problem to comprehend the practicalities of the meetings without being present, but experiencing the way people act and trying to do some networking gave a deeper understanding. Conducting participant observations allowed me to both see and experience the different interactions between people.

Another aspect I was able to observe is the way the managers play an important role in the meeting places. Not only do they make individuals feel seen and appreciated, but they are good examples to other members by living according to the same values as they are trying to implement. In the analysis I go further into the importance of compliance between the values the leaders preach and the way they act in the creation of a common culture.

While conducting fieldwork I spent four days a week for a period of three weeks in Skien during which I borrowed a desk at Klosterøya. This co-location is something IKTG has wanted, and they seem to be striving for even more members to locate close to each other. There are 12 people who shared the IKTG office and the fact that there are people from several different firms in the same room makes for an interesting dynamic that I got to witness and be a part of first hand. The people in the office cooperate, share knowledge and in general have an openness about them that comes very close to the descriptions the managers gave me when they talked about how they want the cluster to function.

In order to get a fuller picture of the situation I combined participant observation with semi-structured interviews and there are several reasons for this. First of all it was possible for me to confirm both the information I got through interviews and the impressions I was left with after observing. If the information gathered through both methods match I can be even surer of my findings. Secondly, observations were useful in that they let me have the same references as the informants and when they spoke of an activity, a place or a person I would often know what they were talking about. Finally, observations and interviews are often used together because observations can provide you with interesting topics for interviews (Blomberg, Giacomi et al. 1993). During my fieldwork I did add more questions to my interview guides.

### 5.2.2 Interviews

During the fall of 2010, interviews with a total of thirteen informants were conducted and then one more in the spring of 2011. This interview was a little different as informant M12 has good knowledge about the Norwegian ICT industry and practical experience working with clusters. The two cluster managers, Tor-Arne and Torkild, were interviewed twice. This section will go into more detail about the interviews conducted as a part of my research. First I say something about different types of interviews and why I chose the semi-structured style. Further, I go into how interviewing has been fruitful in my work on clusters and how I went about performing the interviews, lessons learned, and challenges I encountered.

#### List of all informants:

Code / name	Sex	Position in “home organization”	Number of interviews
Tor-Arne Bellika	Male	Project manager at IKT Grenland	2
Torkild Follaug	Male	Manager at IKT Grenland	2
M1	Male	Manager	1
M2	Female	Employee	1
M3	Female	Project manager	1
M4	Male	Employee	1



M5	Male	Employee	1
M6	Male	One person firm	1
M7	Male	One person firm	1
M8	Male	Manager	1
M9	Male	No longer employed in a member organization	1
M10	Female	Employee	1
M11	Male	Manager	1
M12	Male	Manager	1

Figure 3 (Informants)

In conducting interviews we mainly talk about three different types; from the highly structured, through the semi-structured to the unstructured (Crang and Cook 2007). In the highly structured interview the researcher has carefully planned out questions that are asked in a specific order, in the semi-structured type there are some topics that are supposed to be covered, and in the unstructured interview the researcher and the informant take part in more of a free flowing conversation (ibid).

The main source for creating data in my research was through semi-structured interviews. The reason for the choice of the semi-structured style was that I wanted to be open to what the informants had to tell me, but I also had certain topics I wanted to make sure I was able to discuss with all informants. I also wanted to create an interview setting where it was possible for informants to bring up topics and I wanted to remain open to interesting research areas that could manifest themselves during the fieldwork. Crang and Cook (2007) mention that being prepared and having knowledge about the field before conducting interviews can be useful as the informants may feel more comfortable and answer in more detail. Especially when I interviewed people with good knowledge about clusters, I found it valuable to also have that background in order to get a good discussion going. This is one of the areas where the document analysis was useful. It allowed me to have some insight into the cluster's development and history before going into interviews and observations.

Interviews and conversations with different people has been my main source for creating data and throughout my interviews I have made several realizations. One of the most important things I learned is that different members view the cluster differently and seek to get different

things out of being active. I realized that involving a large variety of people in the cluster activities also cause challenges that needs to be solved. Talking to as many as fourteen people was fruitful and it gave me an insight that talking to fewer people wouldn't have. The realization that they relate to the cluster in different ways, for example, came from talking to people with different backgrounds. I wanted to both talk to people who are in charge of managing IKTG and have a passion for clusters and to people who are not involved to that extent. I was lucky enough to interview both Torkild and Tor-Arne, and a wide range of cluster members. It was interesting to talk to managers and learn more about IKTG's structure, strategies and activities while the members could give me their views on IKTG from a participant's perspective.

The setting for the interviews was mostly at the office where the informant worked but at times they also came to Klosterøya. I don't think this made any of them feel uncomfortable because this is a location familiar to them as the Thursday meeting and other activities related to IKTG happen there. I conducted all of the interviews in private and this was a conscious choice. I wanted to make sure they could speak openly and not be afraid that others could hear them (Crang and Cook 2007). I also made an effort to come to wherever was most convenient for the informant as many of them were very busy. Sitting in an office or a conference room also made it easy for me to record the interviews without being afraid of disturbing background noise.

In all of my interviews I started out by introducing myself and my research. I gave the informants an information sheet<sup>16</sup>, and I also verbally told them a little bit about what I wanted to research. I told all of them that my interest was the individuals who are members of the cluster and their relationship to it. In that way I made sure that they knew that what they had to say was important. Because I talked to people with very different backgrounds the interviews were very different and at times challenging.

In preparation I had produced several topics I wanted to cover and follow-up questions I could ask in case the informant didn't have much to say. The topics were mostly the same for the managers and the members, but in the interview guide for the managers I also added some

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<sup>16</sup> This information sheet is attached in the appendix.

questions about the structure of the cluster<sup>17</sup>. To have follow-up questions proved to be fruitful as some people were not as talkative as others.

Even with the prepared interview-guide I experienced firsthand how difficult it can be to get people to understand what you are looking for. At times I felt like there was a language barrier I had not expected. In my interviews with Torkild and Tor-Arne we had discussed “knowledge sharing”<sup>18</sup> and I believed this was a term familiar to the members. But when I asked them what this phrase meant to them, I experienced that several people didn’t understand what that question or that phrase meant. I was mostly able to explain to them what I wanted to know. During some of the interviews it also became clear that the topics I had prepared were not ones that excited all the informants to the same extent. This resulted in some interviews being very short. At times it provided me with interesting information to also ask the informants if they wanted to add anything at the end of the interview.

All in all the interviewing experience was good and I learned a lot about myself as an interviewer. After returning to Oslo I realized that some of my questions had been too general because of the somewhat open approach in the first round. So I found it useful to go back and do a few follow-up interviews. I was able to talk to the two cluster managers again and also talk to one new informant. This proved to be a good decision for several reasons. Firstly, I was able to ask follow-up questions about topics I felt I had inadequate information about. Secondly, I was also able to keep track of what went on in the cluster for a little bit longer. When I talked to Tor-Arne and Torkild for the second time, they could update me on what had happened in the cluster and this provided me with interesting information about, for example, the financial situation.

All the interviews conducted for this research were recorded digitally and transcribed. The transcriptions happened at different stages in the time after returning to Oslo. Crang and Cook (2007) don’t think the “read-then-do-then-write” approach is the best way to go and you should work on all these things simultaneously. It probably would have been better if I had transcribed the interviews sooner after they were conducted (this is also recommended by Crang and Cook), but the fact that I performed all of them in a very short period of time made that impossible.

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<sup>17</sup> The interview guides and information sheet are attached in the appendix.

<sup>18</sup> Translated from the Norwegian word ”kunnskapsdeling”

### **5.2.3 Document analysis**

Conducting document analysis has been useful in finding out about IKTG's history and how it has developed. To understand the context around the case at the present time, its historic context, and some of the aspects that affect the cluster the documents have been my main source. I also got some information about this from my interviews, but the documentation was crucial. Through benchmarking documents I was also able to learn more about how the cluster has been successful and how it is rated by others.

I was fortunate to get access to a lot of different documents provided by Tor-Arne. From early on he gave me access to all documents that could be of interest. This kind of openness and willingness to share is yet another example of how leaders practice as they preach. In addition I have been signed up on an e-mail list and through this I have received weekly updates from IKTG and other e-mails members get. Later on in the research process Tor-Arne has also provided me with further documents, such as the benchmarking reports. Crang and Cook (2007) underlines the importance of using different kinds of documents as background information.

Being on the mailing list showed me how the weekly update is used as a way of maintaining the culture and identity that the management has been working hard to establish. This is a work in progress and a job that is never finished. Sending out e-mails that live by the same rules as the managers preach is a huge part of this job, and without access to them I don't think I could understand this part of the cluster work to the degree I do now.

In addition to the fieldwork described so far in this section, I was fortunate enough to attend a cluster conference in Copenhagen six months after the fieldwork at IKTG was finished. In the following I will go into this in a little more detail.

## **5.3 Conference**

In May 2011 I was invited to join Tor-Arne for a cluster conference in Copenhagen. The conference was held in order to sum up the latest benchmarking IKTG participated in. At the conference I met people working with clusters from all over Europe and also participated work-shops and lectures. I learned that most cluster managers are not paying attention to the individuals who make up the clusters. When they were talking about "members" they would

refer to member organizations. It was also interesting to see that the final report on the benchmarking, called “Clusters Are Individuals” (Lämmer-Gamp, Meier zu Köcker et al. 2011), deals with treating each clusters as an individual cluster, not clusters consisting of individuals. Even though this is the largest international analysis of its kind and they point out that there are more factors impacting cluster than earlier research suggests, they have left the individual participants out.

Next I will look at the ethical considerations for this study. I have been in contact with many people and it is important to make sure sensitive information is handled correctly.

## **5.4 Ethical considerations**

Before starting any of my fieldwork I submitted an application to NSD (Norsk samfunnsvitenskapelig datatjeneste). In order to get the application approved it was necessary to have a plan on how I was going to maintain the rights of my informants. All of my interviews have been recorded digitally and transcribed. The transcripts have been stored on my personal computer and the recordings and transcripts will be deleted after the project is finished. In the transcripts I have left out names to ensure the anonymity of the informants. I also provided all of them with information about the possibility to withdraw from the research at any time. The only two informants identified by full name are Torkild Follaug and Tor-Arne Bellika, and this has been cleared with them.

## **5.5 Conclusion**

In this chapter I have explained how I have chosen to conduct a case study using the methods of participant observation, semi-structured interviews, and document analysis. The goal of the study is to say something more general about the relationship between clusters and individuals, and about some of the processes in the development of a cluster. By looking to an extreme case like IKTG where they focus on individuals, I hope to be able to bring forward some insights that can be interesting for other cluster managers, cluster participants, policy makers, and cluster researchers. I believe that the methods used are the ones that provide the fullest picture and the most insight into the case. In the next chapter I will analyze the empirical material gathered during fieldwork.

## 6 Analysis

The goal of this analysis is to bring up the elements I consider to be important vis-à-vis Porter in making up a strong and robust cluster. These elements are a focus on individuals, the use of translations processes and boundary objects, co-location, and culture. In chapter 2 we saw that the individual is not a part of the cluster discussion and through this empirical material I want to show how important the individuals are. I'll do so by first showing how the individuals play an important part in both the foundation and the maintenance of IKT Grenland (IKTG). Secondly I go into the use of "boundary objects" and how they aid the individuals in communicating and in keeping the cluster robust. Then I shortly touch upon the topic of co-location. Finally culture, identity, and motivation seem to be essential in the maintenance of the cluster. In this chapter I show how the empirical material clearly displays that the lack of focus on individuals in the cluster theory is a shortcoming and how the material shows that each of the other elements can help explain why IKTG has been successful in creating a robust cluster. Ending the chapter I shortly sum up the most important findings.

### 6.1 Clusters and the individuals

In chapter 2 we saw that even though Porter's model is detailed and has been derived from a large study, the individuals have not been a focus area and the most common criticisms against Porter don't show any signs of the individual either. My material shows how individuals are important to IKTG and this has been one of the elements that make for a strong and robust cluster. The system of relying on certain individuals to keep the cluster going might be fragile but by reaching "critical mass" (Leigh Star and Ruhleder 1995) it makes for a strong system that has been an important part of IKTG becoming successful. I will also look to the founders and managers of the cluster and show how these individuals have been important in creating a strong and robust cluster.

I became aware of the focus on individuals during a preliminary conversation with Tor-Arne. Then during the first interview Tor-Arne explained that their decision to focus on individuals has been one of their biggest successes:

"Yes, there are very many individuals. And I believe that maybe our biggest success was when we realized, and started to focus on, that we are driven in that kind of work as individuals. (...) when it comes to knowledge development for example, then it is your

personal interests that control what you get engaged in even though you, a little unconsciously, jump between thinking about being a representative for your firm and a representative for the professional person. (...) When we went over to saying that okay, we are going to be something for all the individuals in all the member organizations and reach out to all the individuals who are employed in the member organizations, then things really started to happen.” (Tor-Arne, interview 14/9-10, my translation from Norwegian)

This quote shows that the management at IKTG not always focused on the individuals, but it becomes clear that in their eyes this decision was good and has positive effects. The quote also shows that a person has more than one interest and it is difficult to separate between when a person represents an organization and their professional interests. The most important aspect for the argument I’m concerned with in this thesis is that after the decision about including individuals in the strategy of IKTG, things really started to happen. I believe this strongly suggests that the individuals need to be considered in the cluster discussion.

When interviewing members of the cluster it was mentioned that IKTG stands out from other networks by being more open and sharing. Informant M1, for example, said that he had participated in several clusters and networks before but, what is different about IKTG is that “(...) it is more personal, more open, more direct, more sharing (...)” (informant M1, interview 15/9-10, my translation from Norwegian).

The decision to focus on individuals was not mentioned much by the members, but they do talk a lot about how being involved has been positive for them. Examples of this can be found, for example, in interviews with informants M3, M4 and M10. M3 (interview 21/9-19) said that IKTG is a place where she learns more about her professional interests, and a place to expand her network, M4 (interview 22/9-10) gets a lot out of giving presentations, while M10 (interview 30/9-10) also got information about job options for someone in her immediate social circle. Such statements teach us that IKTG can fulfill many different needs and have a positive effect for individuals with different aspirations related to cluster participation. The fact that all these different people are able to work together and cooperate within the cluster environment is something I want to look further into. In the section about translation and boundary objects I try to explain how this is possible.

The choice to focus on individuals is not mentioned in the documents that have been available to me during the research but in an evaluation (Oxford Research AS 2011) and in an article

published in Magma (Terjesen 2010) the importance of managers and initiators as individuals and driving forces in the cluster is mentioned. I return to the importance of managers later.

Even though the decision to focus on individuals is mentioned by managers as one of the most important they've made, it's not mentioned in the cluster theories presented in chapter 2 or in the documents concerning IKTG. I believe this suggests that "the individual" is missing from the theories. As mentioned previously Porter has his focus on firms and it's therefore understandable that individuals are not mentioned. It seems to me that many of the other authors who's contributions I have read in relation to this thesis also have their focus on a higher level. In chapter 2 I mentioned that there doesn't seem to have been performed any studies similar to mine in Norway before. It might be that this lack of attention on the individuals comes from the fact that much research and evaluation have been performed in relation to public programs, like the Arena program. Looking at individuals the way I do in this thesis does not result in quantitative results that can be displayed in charts or tables which might be desirable in that type of situation. Informant M12 also mentioned that many clusters in Norway exist because of public programs: "(...) these clusters, they have come to be because of public funding. A large part, maybe not IKT Grenland, but many of the others are results of the fact that there is public money (...)" (informant M12, interview 18/3-11, my translation from Norwegian). We see here that if it wasn't for public funding many clusters wouldn't exist and I assume that an overall picture of how the cluster is doing is the most important thing in evaluating how the public programs are working.

But to start of it is important to recognize that being a cluster organization causes certain challenges as the member organizations have no obligations towards one another and there are no guarantees for success. From Motoyama's (2008) definition of a cluster (presented in the literature review) the only things that link the companies are commonalities and complementarities and it is necessary that all the four determinants are present and functioning in order to make a self-reinforcing system (Porter 1990). I believe this means that the individuals need to see the potential in participating. An organization can't come to this realization; the people within the organization have to understand what they can gain both as professionals and as representatives for their firms. But my main goal is not to see whether IKTG fits into the model. My focus is on the cluster's development and the fact that people have very few obligations both to other members and to the cluster makes it challenging both to get the organization started and to maintain it. In both these parts of the cluster



development individuals have been important in some way. Next I will show how the fact that IKTG is a cluster makes the maintenance of the organization a challenge and how the focus on individuals has been a part of making the organization a success.

### **6.1.1 IKT Grenland as a cluster**

In the literature review we learned that the word “cluster” has been used about a variety of organizations but that the most common use includes four criteria (Malmberg and Power 2006). The first one was spatial proximity. For IKTG finding the geographical boundary has not been particularly difficult even though this is often a challenge for clusters. During the second interview (25/11-10) Tor-Arne mentioned this as an advantage IKTG has compared to other clusters. One of the positive results is that it is easy to determine what municipalities<sup>19</sup> and county authorities<sup>20</sup> they need to work with. He also said that the future might involve an expansion into new areas, but the Grenland region is where the focus is now.

The second criterion was that there should be functional inter-linkage (Malmberg and Power 2006) which means local collaboration and competition. This is also an important part of what IKTG is. Even though one of the goals for the cluster is to get members to cooperate, they also need competition within the cluster (Tor-Arne, interview 14/9-10). As we have learned from the cluster model competition, or rivalry, can help push firms to become even better (Reve and Jakobsen 2001).

The third criterion is that there needs to be some form of self-awareness (Malmberg and Power 2006). IKTG has a clear name, a strategy, a vision, goals etc. which makes it clear for the members that this is a cluster. But there are challenges connected to this also. The name might make some potential partners feel like they don't belong as the name suggests that it is a cluster for ICT<sup>21</sup> firms only.

The forth criterion is success (Malmberg and Power 2006). In chapter 2 I showed how we can say that IKTG is successful in that the number of employees, operational result, and value creation went up between 2006 and 2009 (Oxford Research AS 2011). This shows us that it is

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<sup>19</sup> Translated from the Norwegian word “kommune”

<sup>20</sup> Translated from the Norwegian word ”fylkeskommune”

<sup>21</sup> IKT in Norwegian

legitimate to call IKTG a cluster but some of the aspects related to being a cluster causes challenges that need to be overcome.

Here I would like to clarify my use of the word “cluster”. The cluster term can be fuzzy and be used to describe different things. During an interview with Torkild he explained that they use the two terms “cluster” and “cluster initiative” about different things:

“I would say it as simple as the cluster being the entire environment whether they are members or not. The ICT environment in Grenland and Telemark is what I will define as the cluster. Then we have what is normally called the cluster initiative. That’s the organization which facilitates the cluster, and the members.” (Torkild, interview 15/9-10, my translation from Norwegian)

The case studied in this thesis can be labeled “IKT Grenland” and when I talk about the “cluster” this is what I refer to. But it is important to not forget that this organization is a part of a larger environment and the vision for the cluster is to make Grenland the most attractive location for software developers in Norway (IKT Grenland 2010 b). This means that the vision includes all of what Torkild call the “cluster”.

### **6.1.2 Challenges**

As mentioned above the member organizations have no obligations towards one another and it can be a challenge to get organizations involved in the cluster work without guarantees for success or monetary payback. But, if IKTG wants to reach their vision one of the things that need to be in place is a member mass that is large and varied. There are several reasons for this. One is that in order to keep the cluster going in the future it is necessary with a certain amount of people who are willing to do cluster work without getting paid (Torkild, interview 25/11-10). A second reason is that the cluster model shows us four determinants that reinforce each other (Porter 1990). If these four are present, it promotes the clustering of an industry. This can be linked to the term “critical mass” which according to Leigh Star and Ruhleder is focused “(...) on the number of subscribers/users at which system use becomes viable.” (Leigh Star and Ruhleder 1995:22). The large member mass or “critical mass” relates to keeping the cluster going but many of the informants also use this term about the amount of people at meetings etc. Looking to IKTG’s vision about becoming the most attractive location for software developers in Norway, it seems that the clustering of the ICT industry in

Grenland is necessary and then also a critical mass. One of the goals on the way to reach the vision is to create growth for the firms who are already members (IKT Grenland 2010 b). An aspect of this is to create cooperation and knowledge sharing. I believe it is important to make a distinction between these two terms. Cooperation means there is an interdependence between people (Schmidt and Bannon 1992) and this should be conceived as a positive. Another aspect of cooperation is that there are secondary activities that need to be performed. This can include planning, task allocation, etc. Secondary activities will lead to an overhead cost in terms of labor (ibid). The challenge then is how to make the overhead worth performing for the participants. Knowledge sharing on the other hand means interdependence isn't necessarily present<sup>22</sup>. Through my fieldwork I have experienced that knowledge sharing at IKTG can include anything from how to set up a printer to teaching someone about project managing. But it is a challenge to get people into these activities as many of the member firms are already competitors. This challenge can be solved by creating trust between the members. In the following quote Torkild explains how trust can help develop the ICT industry in Grenland:

“Yes, that's because we believe the threshold for entering into cooperation is lower where the level of trust is high and the whole thought behind creating a cluster and a meeting place like IKT Grenland is to get new commercial projects and new development projects which then support the development of the ICT industry in the region.” (Torkild, interview 25/11-10, my translation from Norwegian)

This section has pointed out two main challenges that need to be looked further into, 1) creating a large enough member mass and 2) creating trust. I believe that in order to maintain the cluster both need to be overcome.

## **Member mass**

At the moment IKTG's member mass includes many different types of firms, public institutions, and academic institutions (Oxford Research AS 2011) and throughout the fieldwork many of the informants mentioned that the cluster has reached what they call

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<sup>22</sup> This thesis does not focus on the topics of knowledge and knowledge sharing but knowledge sharing is defined as an exchange of knowledge among people at Wikipedia. (2011, 11/5-11). "Wikipedia - Knowledge sharing." Retrieved 4/6, 2011, from [http://en.wikipedia.org/wiki/Knowledge\\_sharing](http://en.wikipedia.org/wiki/Knowledge_sharing).

When I mention knowledge sharing I refer to the exchange of knowledge or information among people but I will not go further into it than that as this is a research field in itself.

“critical mass” (for example informant M1, interview 15/9-10, informant M4, interview 22/9-10). This gives the impression that the challenge of reaching “critical mass” has been overcome to some extent. But what cluster managers meant by the term “critical mass” was unclear. During the second round of interviews I asked both Tor-Arne and Torkild what they meant by this term. Torkild explained that it has to do with being certain that the cluster will continue even without funding from public programs:

“It has to do with members, the number of members and active participants in the meeting places and arenas and projects. We have had a great increase in the member mass the last three years and critical mass is probably a bit of a fuzzy term but what it expresses is that we now have a dedication strong enough in the number of people and organizations that there is a certain confidence in that IKT Grenland keeps on rolling with or without participation in public programs like the Arena program for example. So IKT Grenland has from its modest beginning relied heavily on volunteer work and there will probably still be a lot of volunteer work in IKT Grenland but we feel that the dedication is so strong that this will be possible to do.” (Torkild, interview 25/11-10, my translation from Norwegian)

This means that IKTG seems to have a large enough member mass to ensure that the cluster will prevail even without public funding such as the Arena program. IKTG has overcome the first challenge in creating a robust cluster. But it is also worth noting that informant M4 (interview 22/9-10), for example, used the term in relation to the Thursday meeting. As this is the main meeting place for IKTG it seems that in order to say that the cluster has reached “critical mass” the attendance and participation at these meetings need to be high. But reaching “critical mass” has demanded some decisions to be made and the most important one, according to Tor-Arne and Torkild, was to shift the focus from just leaders and managers to all members. “It was an important milestone to go from focusing on the leaders in the firms and just focus on the firms’ needs to focus on individuals (...)” (Tor-Arne, interview 14/9-10, my translation from Norwegian). With this quote we can see that the focus actually changed from looking at firms and what they needed to see the individuals and focus more on them.

### ***1) The evolution into “critical mass”***

During the first few years IKTG was an organization mainly for leaders and managers and the goal was to create a meeting place and a forum for ICT people in Grenland (Torkild, interview 15/9-10). Both Tor-Arne and Torkild believe it was important when in 2006 they realized that in order for the cluster to prosper it was necessary to go directly to the people

they were hoping to reach (ibid). Through a recruitment campaign they urged all employees in the member organizations to sign up to their mailing list. This meant all individuals could get the same information (Torkild, interview 15/9-10). As a result they could create forums where people doing the same job in different firms could meet, get to know each other, and learn from each other. This was a huge success and according to Torkild (interview 15/9-10) one of the most important things in engaging larger parts of the organizations. In an interview with Tor-Arne this is explained in the following manner:

“(...) we could create meeting places for the ones who had the same role in the different firms. That is those who worked in sales in all the firms, those who worked with project management, worked with software development. The first, what we call a horizontal meeting place or role based meeting place, was the developer forum. We gathered everyone who was developing software. And it was a huge success because then they got to meet each other across firms and see that oh my god, we are an exciting, large group and we all need the same professional development and yes, we can cooperate and things like that.” (Tor-Arne, interview 14/9-10, my translation from Norwegian)

We see here that the decision to switch focus was put into practice by creating forums for different groups or roles. Here they could meet and see that they could get something out of being present. I believe this was a major step in the right direction as it got a lot more people involved in the cluster which was the goal.

The change from having a focus on leaders to letting the cluster be a place for all individuals in member organizations led to a divided focus for the cluster management. They need to look at how the meeting place and other activities are interesting not only for the firms but also for the individuals: “(...) now we need to have two dimensions in mind at the same time when we think about meeting places.” (Torkild, interview 15/9-10, my translation from Norwegian).

When referring to the two dimensions, or the double focus, Torkild is talking about both the individuals as professionals and as representatives for the firms. The line between the two is not clear. Tor-Arne reminded me that a person represents both the firm's interests and the individual's interest and he/she might jump between the two unconsciously: “(...) when it comes to knowledge development for example, then it is your personal interests that control what you get engaged in even though you, a little unconsciously, jump between thinking about being a representative for your firm and a representative for the professional person.” (Tor-Arne, interview 14/9-10, my translation from Norwegian).

## ***2) The Thursday meeting as a place for random meetings and self-reinforcing effect***

With the difficulty of separating between the interest of the professional person and the representative of a firm it is important that the largest meeting place satisfies both parts of the person and the amount of people showing up each month indicates that meetings do just that (from observations at Thursday meetings). But to get people to attend is only part of it; to keep people coming back is more difficult. Informant M2 said she sees some of the same people every month but she also feels there are new faces every time (interview 15/9-10). As an observer I got the same impression after attending several meetings. Conversations with cluster managers suggest that there is room for improvement in getting people to attend more regularly. Both M2's statement and my own observations point in the direction of there being a core of people that attend every month, and that is a good start. I believe it can make other people feel like there is stability, and during the observations I noticed a sensation of permanence in seeing some of the same faces time and time again. To "hold on" to people at the meeting place is important. This is the place where people have a chance to meet others who are interested in the same as them but also people who do very different things. It is a meeting place for the entire industry and there are many possibilities as Tor-Arne clearly stated: "(...) these random meetings. So we, it's a kind of anarchistic strategy; make sure people meet and then more and more will find what they can potentially cooperate about. And again, that they meet on a permanent basis so they build that running trust in each other and can interact effectively." (Tor-Arne, interview 14/9-10, my translation from Norwegian). Tor-Arne believes that random meetings can create cooperation. In a strategy document (IKT Grenland 2010 b) the meeting place is mentioned as the most important contributor to random meetings happening more frequently. But it might take time for people to start giving and not only receiving at meetings. Informant M2 said that even though she had attended several meetings she still didn't participate very actively, but that it might change over time (interview 15/9-10). The Thursday meetings are an important part of the plan to reach the vision for IKTG. If we look back to Porter's (1990) theory we see that even though we have all the different types of members, we also need them to meet, communicate and share knowledge in order to lift the entire industry and create a self-reinforcing effect. I believe this effect can help create strong and robust clusters, but they also need enough people looking for cooperation and being active participants. There is more than one aspect that determines whether people become active. The focus on individuals is one, but the forums show that

creating space for the individuals is also important. In addition I view common culture and values as aspects that can cause stronger bonds between the cluster and the individuals.

### ***3) Acknowledge the individuals***

So far we have learned that the “critical mass” would probably not have been reached if it wasn’t for the focus on individuals. But there is more to this than inviting people and spreading information. The meeting place is probably the most important arena for the members of IKTG as this is the place they actually get involved in the cluster activities (from observation at meetings). I observed the individual focus being present at the meetings and the managers make sure people are seen. For example, at several of the meetings I observed it started out with the person in charge presenting someone who has done well lately or a new member. They do this not just by saying what firm this is, but also by inviting them to stand up and receive applause. They also make sure to sing the birthday song if someone has a birthday. People will also be recognized in the weekly newsletter. In these e-mails you are also encouraged to let the managers know if something special has happened that you wish to tell other members about. In this way individuals are in focus even though the organizations/firms are also mentioned.

So far we have seen that there is “enough” people attending the meetings and IKTG has to an extent accomplished “critical mass”. They have done this by focusing on getting the same information out to everyone in all the member organizations and making them feel welcome and seen at the meetings. The content of the Thursday meetings has also been altered to better suit the new focus. In the following I will look more to the fact that getting people to attend is not enough, you also need them to become active in order to make a strong cluster.

### **Active participation**

Focusing on the two dimensions, the professional person and the firm representative, seems to have had positive effects and has brought more people to the meeting places. But based on the material presented above I would say that in order to get the most out of being a part of the cluster you need to get active. Letting people get to know you can result in more connections. As a researcher I have introduced myself at one of the meetings and in the forums I have attended it has been pointed out several times that I am conducting a study. This resulted in people I interviewed but also people I had never interacted with before coming up to me and asking how my research was going. I also believe that becoming active might open your eyes

to possibilities within the cluster you were not aware of. Informant M6 talked about how being active is important:

“(…) if you are not active in relation to the cluster then it becomes kind of, in that case you pay for a membership in order to go to the Arena meetings and eat free pizza. Then that’s kind of the only thing. So it underlines that it matters how you yourself use the cluster too.”  
(informant M6, interview 24/9-10, my translation from Norwegian)

It is important to notice here that if members just sit around and wait for the cluster to come up with something, it’s likely they will never find a good enough reason to get involved. It is not possible to force someone into being active in the cluster but the cluster managers need to be clear on which opportunities cluster participation represent. As previously mentioned, the forums at the Thursday meetings is one way of providing different opportunities depending on the members’ interests. There are also other activities, courses etc. meant to fit different groups.

As an example the following excerpt shows that the main benefit for managers up until now has been to participate in a firm manager forum which is held a few times a year. For M8 these gatherings are interesting: “In total our firm probably gets the most out of those [Thursday meeting red.anm.]. Me as a leader might get as much out of those firm manager gatherings or firm manager forum.” (interview 29/9-10, my translation from Norwegian).

It’s not possible to force people to be active in the cluster and they also need to speak up and take action in order to get what they want. The interviews conducted for this thesis are with people who are or have been active at least to some degree. This might result in only some of the opinions in the cluster being heard. But this again reflects that the cluster is there for the members who choose to be active and take advantage of the possibilities that lies within it. It is up to each of the individuals whether the cluster is going to be successful. You can say that there is a “push-pull” effect (Martin 1994). The cluster managers are in a way pushing the members to go in the same direction by trying to make a strategy everyone is willing to adjust to (Tor-Arne, interview 14/9-10) and at the same time the individuals are pulling the cluster to change and adjust to their needs and wants by being active in different arenas. This is a somewhat rough classification but it gives an impression of the fact that both cluster managers and members can affect the cluster. I believe this helps create a robust cluster, as it is dynamic



and can change when necessary. If IKTG was static it would not be able to keep up with the dynamism in the ICT industry.

But the fact that the cluster depends on people, both members and managers, to get involved makes for a somewhat fragile system as well. But I believe that if the cluster is going to get stronger the people involved need to be reassured that they are not risking much by being active and that they have more to gain than to lose. Some members have a fear related to being open and sharing because their competitors are also cluster members (ibid). Tor-Arne believes that even they can have some possibility for cooperation but in order to get to the point where sharing is possible all members need to realize the potential that lies within the openness IKTG represents, and trust needs to be established. This brings us to the second challenge. Trust is crucial in order to make the cluster work as many of the members are competitors, at least to some degree.

## **Trust**

Even though reaching “critical mass” (Leigh Star and Ruhleder 1995; Klosterøya AS 2011) is important for the cluster formation it is not the same as creating cooperation and knowledge sharing among members. Even though people are coming to meetings there is still the challenge of members being competitors and there might also be a barrier in people against sharing their knowledge with others. In the book ”Et verdiskapende Norge” (Reve and Jakobsen 2001) it is mentioned that it is a deeply rooted attitude in Norway that knowledge needs to be protected and kept secret. According to informant M1 this is a paradox. He believes that in the modern, open economy the most central person in a network is the person sharing his/her knowledge.

“In a traditional organization (...) it is the one that holds and controls the most knowledge that often has the most power, the most informal power in an organization. (...) In the modern, open economy it is the opposite. The one who’s the best at sharing knowledge actually has the most power from becoming the center of a network.” (informant M1, interview 14/9-10, my translation from Norwegian and selection of samples)

This is an example of an understanding of knowledge sharing and its influence which is positive and exactly what IKTG is aiming for. But even though M1 and several others express a generally positive attitude towards openness and sharing it still seems that many are scared

to share because they are afraid of the competition. Leigh Star and Ruhleder (1995) describe a similar dynamic and mention the competitive aspect, trust, and reliability of information as some of the barriers against sharing and some of the reasons why the system they describe failed. At IKTG the managers are trying to overcome this issue by creating trust by way of letting people get to know each other. Knowledge sharing and openness between individuals is central in the formation of clusters and in an interview Tor-Arne says the following about solutions to the challenge:

“(…) our main job is to create trust and if you trust someone then you are willing to share with them. (…) So to work hard to get people to be open, build a lot of contact points so people get to know each other and gain trust in each other is our most important contribution to the sharing of knowledge.” (Tor-Arne, interview 14/9-10, my translation from Norwegian and selection of samples)

What we can learn from this quote is that trust is fundamental to IKTG. This is also expressed by Porter. He says that mechanisms “that facilitate interchange within clusters are conditions that help information to flow more easily, or which unblock information as well as facilitate coordination by creating trust and (…)” (1990:152-153). Porter makes it clear that creating trust is as important as information flow when it comes to exchange or sharing within a cluster. We see then that trust between people can be the answer to the issues of a rooted attitude to keep information secret, and fear of competition.

The managers have created a phrase as a part of trying to make people overcome their fears: “We cooperate when we can, and compete when we have to” (Tor-Arne, interview 14/9-10, my translation from Norwegian). This phrase is mentioned by both Tor-Arne and Torkild in interviews and some of the other informants also referred to it. The phrase also holds something Tor-Arne strongly believes which is that most people can find something to cooperate about even if they are competitors:

“It’s easy to see that in some areas you obviously compete but our experience is that there are always quite a few things to cooperate about. And we have several stories about firms that came here and were perceived as competitors, then get into dialogue with their competition where after both say that they have had great advantage of that cooperation/competition relationship.” (Tor-Arne, interview 14/9-10, my translation from Norwegian)

Dialogue is important if people are going to find opportunities for cooperation and to lower the barriers against sharing. This suggests that people getting to know each other also promotes cooperation. Several informants, including M5 and M6, said that it is easier to contact other people in the cluster if you first have met them face to face and it is also easier to contact cluster members than firms or organizations who are not members. "A lot easier to go to an IKT Grenland member than to go to someone who are members of ICG for example, an industrial cluster." (informant M6, interview 24/9-10, my translation from Norwegian). This strongly supports the point that socializing among individuals is an important part of cluster work.

The field material I have referred to in this section shows that there is an attitude at IKTG towards sharing and being open and this is something the managers are promoting strongly. This is crucial in keeping the cluster going and in making it robust. As we have seen in Porter's (1990) theory information needs to flow between firms and from the data material we find that trust is necessary for this to happen. Trust comes from people getting to know each other in a social setting as well as a professional one. By attending meetings, talking to people, expanding your network, and sharing your knowledge it is possible to gain as much as you give by for example finding new partners for projects or things as simple as borrowing a charger for your computer (informant M5, interview 23/9-10). Trust, which is important to IKTG, is a part of what holds the cluster together. This point can be related to the topic of co-location which I will come back to later in this chapter.

### **6.1.3 Managers as individuals**

To end this section about the individuals' place in the cluster it is interesting to look at how certain individuals have been a part of founding and starting up IKTG. It seems that had it not been for some specific people who had an idea and the courage and guts to work hard at it, IKTG would not exist today. In the interview with informant M12 (18/3-11) it was discussed how the development of IKTG differs from that of other clusters in Norway. He said that clusters often evolve out of a college<sup>23</sup> with the help of consultants who think they should start a network. He mentioned examples of failed projects but said that IKTG was different in that most of the funding for the cluster came after it was already started and not before. M12 also mentioned in the same interview that there were probably elements in the environment

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<sup>23</sup> Translated from the Norwegian word "høyskole".

around IKTG that also played a part, like good firms and an entrepreneurial spirit, but the individuals were a deciding factor. This makes it really hard to copy what took place in Grenland because you would need the same type of people somewhere else in Norway.

The managers at IKTG are examples of what the cluster stands for, but they also set the agenda and make up a steady focal point for all members. Without people like them the cluster never would have been formed in the first place and it seems they are essential in the maintenance as well.

If we look at the management of the cluster today they have built great relationships with a lot of the members. Almost all the people I interviewed talked about cluster managers using their first names only and further, they spoke highly of their personal involvement. They made it clear that this personal involvement has been essential and that it is appreciated. “Had it not been for some key figures that really have made an extra effort to do it, we wouldn’t have been able to do it.” (informant M1, interview 15/9-10, my translation from Norwegian). Informant M2 also has a lot of faith in the managers: “Those who are at the forefront of it, they are good, they are concrete and I have faith in them. They seem like committed people.” (informant M2, interview 15/9-10, my translation from Norwegian). These quotes are representative for how most informants talk about the managers, both present ones and ones that have moved on to other jobs. But the fact that certain people are so important to the cluster makes the system fragile. Torkild believes that at the moment it is not possible to envision a way to trade that personal commitment with routines that just anyone could follow (interview 15/9-10). I believe this does make for a fragile system, but with the focus on getting to know people and creating relationships mentioned earlier it is possible to find replacements when that is needed. On several occasions during the research period important people left the administration without it causing any big problems. As informant M12 said (interview 18/3-11), having this fragile system means that the cluster managers are always on the lookout for new people who share the same values as them. Informant M11 also stated how important finding the right people is: “But I believe the thing is that those people who are there need to have something in common, something in common related to values.” (informant M11, interview 25/11-10, my translation from Norwegian). The values carried by managers are also the foundation for IKTG’s culture which is discussed later in this chapter.

#### **6.1.4 Summing up**

The focus on individuals has been a deciding factor in IKTG's success and especially for them to reach "critical mass". The cluster is facilitated through a focus on the people involved and their needs. This also shows at the Thursday meetings and I want to point out how important the meeting is in overcoming the challenges presented in this section.

Thursday meetings are where many people have their first encounter with IKTG and I believe the welcoming feeling is important if they are going to continue coming back. This is also a place where individuals can satisfy both their personal and professional interests. We have also seen that socializing help create trust and lower the barriers against sharing. A large and varied member mass, trust, and sharing of knowledge and information all need to be in place to create a self-reinforcing cluster and the Thursday meetings have been important in establishing all these things at IKTG. The meeting is also a culture bearer in the cluster and I believe much of the identity and culture the managers are striving for is communicated through these meetings.

Through the material generated for this master thesis I would like to emphasize that a strategy for facilitation might add robustness as it provides goals to work towards, but at the same time the cluster and its strategy need to be dynamic enough so that the cluster can meet challenges that arise.

IKTG focusing on individuals means that the number of potential active participants has grown substantially. A challenge arises when the member mass grows because it also becomes more varied. The next section looks further into this.

### **6.2 Translations and boundary objects**

By having a focus on individuals more people have become active in the cluster and the challenge then becomes to get all of them to pull together. This section of the analysis uses the term "boundary objects" to explain how people who come from different "social worlds" and who have different personal goals are able to work together towards the same ultimate goal and communicate about IKTG and cluster work. In the following I will show that the active members of the cluster have different intentions with their involvement and very different thoughts about what the cluster is. My goal is to show how the cluster has become

robust despite the fact that people relate to IKTG in different ways and have different ideas about it. I will also relate the robustness to the use of the region, Grenland, as a sort of boundary object that all members can relate to in their own way. In the previous section I explained how the fieldwork points to the importance of “cooperation” in order to make a strong cluster. “Boundary objects” facilitate cooperation because of their robustness and plasticity, and hereby bring people closer together.

Leigh Star and Griesemer (1989) present scientific work as heterogeneous and that it requires cooperation. This creates a tension between viewpoints, or social worlds, that can be solved by translation. IKTG has the same two characteristics as scientific work. It consists of a group of heterogeneous people who need to cooperate and this causes challenges just like at the Museum of Vertebrate Zoology (ibid). But despite the challenges people are able to work together and come to agreement on a strategy. My argument is that the creation of boundary objects has helped create coherence. But before getting into the term “boundary objects” it is necessary to look at translations. These are the processes through which the different viewpoints are managed. This process is continuing for IKTG and is never finished.

### **6.2.1 Translations**

In the theory chapter I showed that in order to have a boundary object you need some form of translation between different viewpoints (ibid). Margunn Aanestad describes how actors’ interests are translated “into more generally agreeable expressions, so that several actors may support the resulting translation.” (2003:7). The translation process is crucial to IKTG as they have members from very different types of organizations and the people in themselves are different and motivated by different things.

#### **Different goals with participation and views on the cluster**

Cluster members have different personal motivations and goals with their participation and also different opinions about what the goal of the cluster is. In talking about different backgrounds and goals I can only say something about the people that have been interviewed but I believe they give a good picture of the variety that exists. Informant M2, e.g., found it interesting to participate both for the sake of her workplace and for her own personal interest:

“(…) IKT Grenland also gives us the opportunity that if we go there we can follow what’s happening in the ICT world, we get updated, maybe also what happens in industrial areas around here because things happen all the time.” (informant M2, interview 15/9-10, my translation from Norwegian).

When asked about her own connection to IKTG it became apparent that this was also a factor for her: “I thought it was exciting and I am very interested in ICT. I have learned about it at school but have a personal interest too. And it is a golden opportunity for me to show my face and make myself recognizable too other firms.” (informant M2, interview 15/9-10, my translation from Norwegian). Other informants have other goals with their participation. M9 (interview 30/9-10), for example, wants to help develop Grenland as a region, while M10 (interview 30/9-10) sees it as a place that can be interesting for her employer but also a place to gather information for personal use.

When looking at how the informants talk about the ultimate goal of IKTG it becomes apparent that they look at the cluster from different standpoints. Informant M2 see things from a high level and is closer to the vision: “I think they are working to make Grenland to be attractive for ICT founders who are looking to start new businesses.” (informant M2, interview 15/9-10, my translation from Norwegian). M5 on the other hand talk about values and tacit knowledge: “Creating value by people meeting and talking. There’s something called tacit knowledge which is extremely important. (...) But how do you get it out? (...) But IKTG is an arena to exploit that in a good way.” (M5, interview 23/9-10, my translation from Norwegian and selection of samples). M6 (interview 24/9-10) has a very different standpoint about the reason for having a cluster and he believes IKTG wants to create cooperation and that the cluster can be an actor in developing society. If there had been solely a business focus, the cluster would not have been interesting to him. This shows that the participants view the purpose of the cluster differently and have different reasons for attending. But all of them can relate to the cluster and are able to talk about it.

Even though the central members of IKTG are ICT firms (Oxford Research AS 2011) there are active members from very different types of organizations. It will not be mentioned what informant has what background as I want to make sure they can’t be recognized through this information. The informants range from people employed within the field of teaching, software development, project managing, and sales. This means that their interests and workdays are very different and this is also visible in the goals they have related to their

participation and how they see the cluster. As we saw previously this ranges from being attractive for ICT firms to being a place for cooperation and the exploitation of tacit knowledge. I believe that one reason for the variety in answers might be that the overall vision is a very large goal and can be hard to grasp. It may be easier to focus on goals that are closer to your own. The variety tells us that people view the cluster differently and are influenced by their own backgrounds. Their personal goals for participating are even more varied. An interesting observation related to this is that it seems that there is a difference in the way they talk about this depending on whether they are managers or not. The ones in charge of a department or a firm relate the participation and other answers to the firm's interests to a much greater extent than other informants. An example of this is informant M8 who when asked about the next big goal for IKTG answered by saying that the cluster should focus more on the business aspect: "(...) I would have hoped that it got even more, let's say market-oriented. In relation to thinking market oriented in relation to the members of IKT Grenland, but market oriented in relation to the markets that the member firms operate within. Saying that IKT Grenland could to a greater extent be a tool in relation to establishing relations to potential customers." (M8, interview 29/9-10, my translation from Norwegian).

The informants who are not in a manager position talk about IKTG as a place for personal development (both strictly personal and professional) or even as a tool in developing society in general or Grenland in particular.

Without analytical tools like translations and boundary objects it would be difficult to understand how all these people are able to work together in the same cluster. Looking at what happens using the analytical concept of "translations" provides a better understand of not only what happens at IKTG but it can help us understand how clusters in general can function even though people are different. Next are some examples of how translation happens and they show that not only the managers can be so-called change agents but individuals, groups of individuals, and even the environment around the cluster can be a part of it. It is not possible for me to give a full list of all translation processes; I focus here on a few examples that make good illustrations.

## **Translation processes**

Translation is an ongoing process (Leigh Star and Griesemer 1989). We see this exemplified in organizations that change and develop constantly. It doesn't seem like there are any people



working towards IKTG staying the same, and that it is possible for even an individual to have an effect on its development. Tor-Arne and Torkild gave clear impressions during interviews that the cluster exists for the members and that it is dynamic and has to be able to adapt. And not only does it exist for the members, cluster managers depend on the individuals: “We are totally dependent on the individual (...)” (Torkild, interview 25/11-10, my translation from Norwegian). The cluster is also dynamic in the way that managers adapt and are willing to change the structure of the cluster dramatically if needed. In an interview (25/11-10) Tor-Arne told me that it’s an option to divide IKTG into new clusters that are more specialized if that’s the best way to fulfill the new strategy. I get the impression that for the cluster managers IKTG is a tool in realizing the ultimate vision. If the cluster succeeds, this will help Grenland succeed as a favorable location for software developers as well. With this in mind it becomes apparent that not only managers can be change agents. Other individuals can also express their opinion and be heard. If they are able to get others to agree they can change parts of the cluster. An example of this is the strategy process the cluster went through in 2009. More than 30 of the member organizations (which results in about 1/3 being represented) (Oxford Research AS 2011) participated and this gave the cluster direction (Tor-Arne in interview 25/11-10) . After this process getting members closer to future clients and customers is more important. Most of the managers and leaders of different firms said during interviews that this goal is important to them because they want the cluster and its meeting places to be a way of increasing the amount of business transactions. “In moving forward I believe it is important to make sure that we become a network that can take on the commercial part that we have to live with.” (informant M3, interview 21/9-10, my translation from Norwegian). For the cluster management this is also an underlying goal and an important step in the work on moving towards the vision. This is an example of several allies coming together and creating an obligatory point of passage they can all agree on and that steers them in the same direction. This is what Leigh Star and Griesemer describe in their article:

“(...) it is a many-to-many mapping, where several obligatory point of passage are negotiated with several kinds of allies, including manager-to-manager types” (Leigh Star and Griesemer 1989:390)

It is important to keep in mind that translation doesn’t mean that one person or group gets their way while others don’t get anything. Translation is, in the words of Leigh Star and

Griesemer (1989), about getting people to adjust their goals, create coherence and in that process getting everyone to feel like they have gained something. Terjesen (2010) also mentioned that this is important for IKTG. He states that their intention is not to get more for some, but to get more for everyone.

Individuals can also perform translation work by getting involved in different forums, on the board etc. These are places where they can meet potential allies as they will often have the same field of interest. People can act as change agents within the forums. This can be done in more than one way and some of my informants described how they had been active and through such participation have influenced the forums. Both informant M6 (interview 24/9-10) and M11 (interview 25/11-10) have been a part of starting up forums related to a personal or professional interest. This is a very drastic way of exercising an influence and is probably not something anyone would do. But it shows that it is possible to take charge of your own involvement in the cluster and that it is possible to use the forum platform as a way of gathering people in order to reach your own goal. This is a good example of a translation process where you gather allies and place yourself as a gatekeeper (Leigh Star and Griesemer 1989). Informant M9 (interview 30/9-10) was a forum leader while being active at IKTG. This is a role that lets you have a lot of influence over what goes on in a forum: “So that is what my job was, establishing a work group from environments that I thought it was right to pull in (...)” (informant M9, interview 30/9-10, my translation from Norwegian). We see here that as a forum leader he could get the people he thought was right involved. I think this suggests that he had a lot of power over the forum and could turn it to try and work towards his own goals even though he also had to work closely with the cluster managers (interview 30/9-10). But the forums are also often open for discussion where anyone is free to speak their mind. M5 talked about this: “And there the threshold is pretty low for providing input and ask questions, answer, and share experiences.” (interview 23/9-10, my translation from Norwegian). In this way I would say that it is possible to influence the other participants and get them to adjust their goals to coincide with your own by creating a forum, being a forum leader, or by becoming active and take part in the discussion.

From reviewing documents it becomes apparent that not only the strategy but also IKTG’s goals have been modified over time. The overall vision hasn’t changed much but the main goals as they are presented in the Arena application from 2007 (IKT Grenland 2007) and the ones that are presented in a strategy document from 2010 (IKT Grenland 2010 b) differ. I

don't have enough knowledge to make a statement about why this has happened, but this indicates to me that there is a continuing translation process taking place between IKTG, the members, and the environment that surrounds them.

I believe that creating a common culture and identity is also translation processes. The culture at IKTG is based on some basic values and everyone needs to agree on them for it to be possible to work together in the best interest of the cluster. I will go further into the topics of culture and identity later in this chapter and there I will explain further how the creation of an organizational culture happens and how it can be viewed as a translation process.

The most important aspect in translations is to make sure that there is coherence within the cluster. This became more of a challenge when a larger variety of people became active in the cluster. People are engaged in the cluster work through different channels and this makes it possible for different people with different needs to find a way of being active that suits them. I believe it is important to make members understand that their personal motivations as well as professional can be met by being active and that they have many options on how to participate. People would not be able to all go in the same direction if it wasn't somehow beneficial to all of them. The translation process and the development of boundary objects also seem to help the members communicate. This is one of the aspects I will look into in the following section. There I focus on two boundary objects, "IKT Grenland/the cluster" and "Grenland/the region".

### **6.2.2 Boundary objects**

Before moving on to discuss the examples it can be useful to shortly re-visit the definition of a boundary object. In their 1989 article Leigh Star and Griesemer state that boundary objects are both robust enough so that it makes sense for people with different backgrounds to talk about them but at the same time they are plastic enough that they can be shaped to fit into all the different viewpoints. "Boundary objects" are developed through translation processes. Aanestad (2003) describes how a translation may be inscribed into a medium. I believe this can be compared to a boundary object and it is a good explanation of how they come into being. I believe that through translation processes the cluster members have placed their own understandings as labels on "IKT Grenland", but at the same time this is a strong enough "brand" that it doesn't fall apart. The term boundary object is important for my research as it can help understand how it is possible for people with such different backgrounds and goals

to communicate and work together. They have a common ground when they meet and I believe this fact might help create more and stronger personal relationships, which, as we have seen previously, are important in keeping the cluster together.

The two boundary objects I want to discuss are closely related. First I will go into how the informants talk about Grenland and how this can be useful in promoting cooperation within the cluster, next IKTG as a boundary object will be discussed. By making Grenland a part of their vision the managers make it clear both what geographical boundary is and who are in or out. I believe that by doing this they make it possible for all members to identify and relate to the vision. This subject was briefly discussed with informant M12. He said that for several of IKTG's member firms their headquarters are located in Oslo. This gives IKTG a connection to larger firms but for the individuals, developing Grenland will probably be the most important thing. This is said in the words of M12:

“Then we get back to the individual being important. I totally agree. If I work for [name of firm] then I'm not as concerned with [name of firm] in Oslo as with my family feeling good in Grenland, I would think. To kind of connect those things together and makes it even more motivating to contribute locally.

Question: That they are building the region?

M12: Yes. I think that's smart. Everyone should be proud of where they come from.”

(informant M12, interview 18/3-11, my translation from Norwegian)

M12 believes that the region is important to people and that they will want to be a part of building it and making it better. No matter where the headquarters of your employer is, where you live will probably be most important to you. But what the different individuals want and mean when they talk about Grenland or building the region might be different and they may have different goals and intentions.

Grenland can be seen as a boundary object in that people can put their own meaning into it when they use it but at the same time it is strong enough so that all members can relate to it. One informant seemed very eager to be actively involved in recruitment and keeping young minds within the region and work towards making job opportunities for them (informant M9, interview 30/9-10). Someone else saw Grenland as a place where there is a great professional environment that is interesting to be a part of (informant M6, interview 24/9-10). Even though they look at it differently and have different intentions for building the region, all informants had opinions about it. The region also seem to have been important in trying to create a

common identity, “us here in Grenland” (Torkild, interview 25/11-10). I will return to this later.

The other boundary object to be discussed here is “IKT Grenland”. This is talked about in many more ways than “Grenland” and it is interesting to understand just how flexible this term is. IKTG can be talked about as a cluster, a workplace, a group of people, an office, the entire member mass, a political actor, a network, and many other ways (interviews with f. ex. Tor-Arne, Torkild, M3, M4, M5, and M7). One of the informants said “the people in there (pointing at the office), they are IKT Grenland” (informant M7, interview 29/9-11). The flexibility would be a huge challenge if it wasn’t for the fact that the term at the same time is robust enough so that everybody knows what they talk about when they talk about it. When looking to how the cluster is looked at from the outside there is a consistency between different people. Terjesen describes it as “(...) Norway’s fastest growing industrial cluster and the country’s largest IT cluster.” and further as “(...) an industrial cluster that works to promote cooperation between and the conditions for IT firms in the Grenland region.” (2010, my translation from Norwegian). Oxford Research writes that “IKT Grenland is a member based interest group for ICT firms, larger user groups, research and education stakeholders, and regional development actors in the Grenland region.” (2011, my translation from Norwegian). Tor-Arne’s description was also very similar and when describing IKTG he focuses on the structural and official elements:

“Yes, it is structured, well it is a judicial unit just like an association when it comes to facilitation. So it is a non-profit member based organization where firms can be members, public actors, academic institutions and yes, that’s the triple helix and if you are going to use the quadruple helix than some investment environments should also be a part of an industrial cluster. So everyone can be a member. We have a general management which consists of Torkild and then there’s a set of project managers who are hired to run different projects. And the whole administration, or the cluster initiative as we like to call it, is hired from the member firms (...)” (Tor-Arne, interview 14/9-10, my translation from Norwegian)

We see that even though it is possible to describe IKTG as a purely member based industrial cluster with a certain structure it is also possible to talk about it as something else according to your own personal relation to it. When the cluster managers talk about IKTG they think about the whole structure as they are the ones running it and they are probably the ones who are the most familiar with its functions. For them IKTG is also a workplace but they give the

impression of it being much more than that. Torkild mentioned (interview 25/11-10) that from the very beginning there has been a lot of volunteer work in relation to the cluster. This large involvement and willingness to get the cluster started even before funding was in place shows a great commitment and that he sees the cluster as being something worth working hard for. For the other informants IKTG can be something very different. As we have seen previously, managers can see it as a place to connect with other managers through the managers' forum or it can be a place where your network, professional and personal, expands. But it is important to remember that one person can have many different viewpoints, or be part of many "social worlds" and in that way relate to the cluster in more than one way. It is even possible to relate to it differently in the course of a Thursday meeting for example. In the previous section we saw that people often switch between representing their workplace and the professional person. These two parts of a person may inhabit different "social worlds", or they may intersect.

With one big, hairy vision and many smaller and more short-term goals, IKTG has something everyone can relate to and they are able to communicate about it. They can talk about future opportunities in the development of the cluster, they can discuss its role in society, or they can say something about the guys running the operation and how pleasant they are. The interviews also reflect this. Sometimes they were on a very personal level and concerned what the cluster and the people in it had done for the informant personally, and at other times they concentrated around what was lacking in order to make involvement even more attractive (interviews with f. ex. M3 and M10).

Boundary objects help several of the cultural and social processes mentioned in relation to the problem statement. Communication is one of them but that is a huge topic. By having a common ground it is easier for people with different viewpoints to both find each other and communicate. I believe that the Thursday meetings provide an opportunity to connect with people and with the fact that they all (or at least most of them) live in Grenland and that they are all members of the cluster, there is a foundation to start a conversation. These social processes are, as we have seen, important in creating trust, cooperation, and flow of information. In the section about culture I will show how the creation of a common culture can be viewed as a translations process. That will also lead to the creation of boundary objects, such as the slogan. People can relate to in different ways, but it does provide certain guidelines and an understanding of what the cluster stands for.

Translations and boundary objects are only a part of the explanation for how IKTG has managed to become successful. It is not possible for others interested in creating a cluster to copy the translation processes that happen at IKTG because they happen through the interactions of those specific people and according to their goals, and what arenas they have available to them. But the concepts are useful in understanding what needs to happen in order to have a robust cluster when the member mass is varied. To me that's a part of what makes translations interesting. They are not called "translation processes" by the people involved but in order to create a robust cluster there needs to be constant negotiations and development.

I am left with the impression that the "negotiations" are performed because the members realize that if IKTG is going to prosper they need to pull in the same direction but at the same time they want to reach their own personal goals. The translation processes and the negotiation that goes on when creating obligatory points of passage might go faster and be more productive if people get to know each other and find out about each other's goals. In the previous section we learned that in order for people to get to know each other and create trust they need to meet. I believe that if people are co-located the likelihood of them finding out more about each other is larger. The development of a common culture can also be called a translation process leading up to boundary objects such as slogans etc. I believe this translation process is stronger for the people located at Klosterøya and in the following I go further into this.

## **6.3 Co-location**

This part of the analysis deals with the topic of co-location. I will look into how the informants located at Klosterøya talk about co-location, and show how this is a good arena for translation work. It seems to me that the people located closer to the cluster management are also stronger carriers of the basic values of IKTG, and I believe this is because translation processes have been happening.

### **6.3.1 Co-location on a day-to-day basis**

IKTG has promoted co-location strongly. The managers are located at Klosterøya, several of the member firms are located there, and the regular Thursday meetings are held in the restaurant/cantina. In late 2010 it was stated in an e-mail (6/12-10) that the cluster

management encouraged members to locate closer to other members within the same industry or ones that were working within related fields. In the theory chapter I showed how both Reve and Jacobsen, and Porter are positive to co-location and believe it can help with innovation, attraction of talent, communication etc. Here I look at how co-location on a day-to-day basis is perceived as positive by most informants and later what effects this seems to have had on the connections between people and their internalization of common values and culture.

Several of the people who were interviewed for this thesis are located at Klosterøya. Some of them have previously had an office at home but had felt the need to find a workplace outside the house (informant M5, M6 and M7). When they moved in to the office environments at Klosterøya they felt instantly welcome. I got to experience the same environment during my fieldwork. At that time approximately 12 people shared an office. That leads to a constant buzz of phone calls, conversations, and people going in and out. Informant M5 (interview 23/9-10) is part of this office environment and said he didn't feel like it was a problem to have people moving around. I got the impression that this actually is an environment where it was easy to just ask a question out loud and get a response right away. Several of my informants have desks in this environment and all of them seem to like the atmosphere of openness. Not all members feel that co-location is necessary. Some are employed in large firms and feel like they have enough of a professional network in the workplace and have no need for more co-location (M7 in interview 29/9-10). During the interview with M12 (18/3-11) we discussed the fact that many people who work within the ICT industry can have the connections they need in order to do their job online. But IKTG provides the opportunity of a physical community on a day-to-day basis for the people who are interested.

The informants who are co-located all agree that it is easier to ask questions or contact people who are in the same room. Informant M5 (interview 23/9-10) said he could just ask a question out loud and he would get an immediate answer. It is easy to get help if you need it and you don't feel like you have to give them something back in return right away. M6 (interview 24/9-10) said that there is a kind of silent agreement in the office that it is okay to ask anyone if you need it and then they can ask you some other time. But just exiting the office and going across the hall makes it more difficult to ask for help (informant M5, interview 23/9-10). It also seems that contacting a fellow member who is located further away is even more difficult but in general it is easier to contact someone who is a member of IKTG than someone who is not (informant M6 in interview 24/9-10).



### **6.3.2 Co-location as an arena for translation**

We have seen that the informants located at Klosterøya see many advantages and enjoy being located close to other IKTG members. An interesting topic of discussion is whether this type of environment would always develop if you place a certain amount of people with different jobs in a room or close to each other. I don't think so. Informant M5 (interview 23/9-10) mentioned that the cluster managers, who are located in the same office as him, are typical "yes-people" and that makes others be the same way. The managers are "contagious" that way and affect the environment around them. I believe this is a translation process that is going on at Klosterøya. By showing physically what openness and willingness to share and help other can accomplish they convince others to follow in their footsteps.

Being located close together on a daily basis also seems to result in a stronger internalization of values and a stronger connection to the cluster for the cluster members who were interviewed. I see two possible reasons for this. Firstly, they are closer to the managers and learn from them how openness and sharing are good qualities. They are in this way a part of a translation process. Secondly, it can be that people who originally have more of the same values choose to locate at Klosterøya and closer to the managers. I believe both reasons can have come into play at IKTG.

An aspect I think it is important to mention here is that when people are physically distributed in the day-to-day work life, the Thursday meetings may become even more important as arenas for translation. For many people this is the only chance to connect with and get to know individuals who do not work for the same employer. These meetings are also important in communicating the common values, culture, and identity to the members. In the next section I will look more closely at what the common culture and identity means and how it affects the development of the cluster.

## **6.4 Culture, identity, and motivation**

Culture, identity, and motivation are closely related topics and in this thesis they are therefore dealt with together. In the theory chapter I looked to Edgar H. Schein (2004) and his theory about organizational culture. He believes that culture is a shared pattern of basic assumptions in a group, which they have learned over time. In this section I will describe the culture at IKTG and relate it to Schein's theory, which is also clear on the fact that leaders are the ones

who create culture by embedding their own values into the group. Further I will look into some possible reason for why there seems to be a difference in the degree of internalization of the culture between different individuals. Finally, I will look to Boas Shamir (1991) and his self-concept theory in order to say something about identity and motivation.

#### **6.4.1 Culture at IKT Grenland**

Previously I mentioned the importance of a set of common values and how the cluster managers find it important to promote them. Here I will describe in more detail how the culture manifests itself and relate this to Schein's three levels of culture (2004). Using Schein's theory is important in order to understand how a common culture based on certain values is a part of keeping the cluster strong. His theory also helps me show that the creation and introduction of a common culture can be seen as a translation process but the leaders need to be change agents in this case, not just any individual.

The most apparent aspect of the IKTG culture is the slogan "Open, happy, and creating" which is repeated as often as possible (Terjesen 2010). Three words make up the slogan and are often integrated in the IKTG logo as shown below. These are referred to as basic values both by Tor Arne (interview 14/9-10) and Torkild (interview 15/9-10), and are supposed to be the foundation of the culture they are trying to create (ibid). With these basic values the culture at IKTG has been described by informants as open, sharing (informant M1 in interview 15/9-10), and positive (informant M7, interview 29/9-10).



Figure 5 (IKT Grenland logo)

At the Thursday meetings and through e-mail the values and their effects are promoted. Tor-Arne said during interview (25/11-10) that it has been a conscious choice to use the weekly e-mails as the pulse in the network. I have mentioned the e-mails before both as a way to reach all individuals in the cluster, as a provider of information, and as a way to acknowledge individuals and their efforts. But the weekly e-mail is also a reminder of what values the

cluster is founded on and a provider of success stories. I view the weekly e-mail as an important cultural carrier. The success stories are of crucial importance according to Schein. He describes three levels of culture (2004); artifacts, espoused beliefs and values, and underlying assumptions. The artifacts are the things that are easy to spot for an observer. At IKTG this would include the slogan, the logo, etc. Further the values and beliefs an organization, or a group, leans on come from a leader. But in order for them to go from espoused beliefs and values to become underlying assumptions they need to prove that they are successful and the leaders need to be consistent (ibid). Through e-mails they get to tell the success stories directly to the members. Several informants mentioned that if they read that someone had done well they would approach that person (or people from that firm) at the next meeting with congratulations:

“It often says that firm so and so has won a huge contract (...) and it’s fun to read about it because I know a lot of people here and it’s fun to know that the workdays got a little easier for them.

Question: Do you feel like that connects you? Do you say congratulations next time you see them?

M4: Definitely, yes.” (informant M4, interview 22/9-10, my translation from Norwegian)

This is one of the functions of e-mail, they tell success stories and that can help connect people. But from reading all weekly e-mails for about 9 months, I see that it is also a place where it is possible for managers to promote personal values, which it turns out are the same as they are trying to promote for the cluster. The e-mails are sent out about once a week and are mostly written by a person the members know. At the moment Torkild is writing them but others have also done a remarkable job. Tor-Arne said in a somewhat joking manner that a former chairman had probably written about two books worth of e-mails (interview 25/11-10).

The Thursday meetings are also places where the values, and what could be labeled rites and rituals of the cluster, are visible. In his article Terjesen (2010) describes IKTG as a “missionary organization”. He cites Mintzberg (1989) and describes how in this type of organization the culture and norms are so strong that they become the most important management principals, and the members of this type of organization are more engaged than members of “regular” organizations. Further he describes the Thursday meeting and how they create a feeling of being a part of a congregation (Terjesen 2010). But this word may provoke

negative associations in some people. I therefore prefer to use the word “tribe” as I heard Tor-Arne use this word himself in describing IKTG (observation at conference). The meetings follow the same structure every month and include elements like the birthday song (if someone has a birthday) (ibid), news of what is going on in the cluster, and a video presentation of IKTG (from observation at meetings). Another regular element is the so-called “virtual membership card”. This “virtual” card is actually a story that is told at all Thursday meetings, known as the “general story” (ibid). An important aspect of this is that the story is never to be written down, and therefore I will not do that either. This story is a carrier of some of the basic values and I believe it can be described as kind of myth.

So far, I have talked about the importance of sharing success stories. One important success story is the statistics that show that the number of employees, operational result, and value creation went up between 2006 and 2009 (Oxford Research AS 2011). It seems that these stories have had an effect in convincing people that Grenland is a good place for ICT industry:

“But I feel that we in Grenland are good with ICT. I have gotten that impression while I have been here, that we can do things, that firms have been noticed outside Norway and outside the Grenland region. That maybe we have gotten bigger.” (informant M2, interview 15/9-10, my translation from Norwegian)

M2’s job is not located at Klosterøya or close to it and her physical interactions with the cluster therefore happens mostly at the Thursday meeting even though she has attended other activities as well. But she has become convinced of the success of the cluster and this indicates that the success stories have an impact.

We see that IKTG’s culture is manifested through such things as logos, slogans, myths, and success stories but the foundation for all of it is the values. All the tangible expressions are what Schein (2004) would describe as artifacts or the most visible part of the culture. It is made visible through exposure at the Thursday meetings, through e-mails etc. The values of openness, sharing, and creativity would be either “espoused beliefs and values”, or “underlying assumptions”. I believe that at this time they are not yet underlying assumptions because if they were it would result in little variation within a social unit (ibid). Espoused beliefs and values are carried by leaders and proposed to the organization, but they have not been proven successful and internalized yet. In IKTG we see variation as to what degree the

members live by the values and have internalized them. I will look more into this later, but first I will go further into how the leaders are the founders of a culture.

#### **6.4.2 Leaders as founders of culture**

In the theory chapter we learned that Schein (2004) believes it is almost impossible to define either culture or leaders alone because they are so closely connected. In IKTG this manifests itself clearly. Terjesen (2010) also noticed this and states that it is very difficult to separate between the managers, or as he calls them “the generals” of IKTG, and the culture. It is important for the managers to live by the values they are trying to promote and Torkild states that they make an effort in trying to be “contagious” in that sense (interview 15/9-10). This seems to pay off. People notice that the values come from within and that they are not faking it. They appreciate that the slogans and values are not just something they say, but something they orient their practices around. When asked about whether the managers live up to the values “open, happy, and creating” informant M3 had no doubt: “Yes, that is my experience absolutely. The most important ones, most central resources I think do it. I am more uncertain about the ones on the board.” (informant M3, interview 21/9-10, my translation from Norwegian). The values were also something she could relate to and she said she really enjoyed promoting them. Informant M2 also like the slogan and said it could come straight out of a book about creating a brand. “And I feel that they live by those slogans and that it’s not just something they say.” (informant M2, interview 15/9-10, my translation from Norwegian).

Informant M1 describes how the cluster depends on individuals, but that the founders and leaders of IKTG also pull the values into the organization:

“And then there are some of the basic values, when they started, those people pull in things like that and set the standard for it. Like for example, let’s be positive and brag about each other. That is lifting each other up.” (informant M1, interview 15/9-10, my translation from Norwegian)

Informant M11 points to the importance of some of the key characters in the cluster and states that “(...) many of those key characters have been important because they are people, generous people and they stand for those values personally.” (interview 25/11-10, my translation from Norwegian). From looking at members’ descriptions we can see that what the

managers say and what they do culminate to the same thing. As mentioned in chapter 3 Schein's theory requires consistency in order for a culture to develop. This we hear echoed in the interviews about IKTG's managers. Consistency can also be seen through the fact that the values haven't changed even though there have been other structural changes. Earlier we saw that the goals have changed over time, we have also seen a new cluster develop parallel to IKTG, namely KunstKom, a cluster for art, culture, media, and communication firms (informant M6, interview 24/9-10). But these structural changes have not affected the values of openness, happiness, innovativeness, creativity, and sharing. Openness, innovation, and cooperation is mentioned as important areas in several documents, like the application for the Arena program (IKT Grenland 2007) and an evaluation report (Kokkersvold 2009).

### **6.4.3 Embedding mechanisms**

Edgar H. Schein (2004) mention six primary embedding mechanisms:

- 1) what leaders pay attention to, measure, and control,
- 2) how leaders react to critical incidents and organizational crisis,
- 3) how leaders allocate resources,
- 4) deliberate role modeling,
- 5) how leaders allocate rewards and status, and
- 6) how leaders recruit, select, promote, and excommunicate.

In the theory chapter we learned that the primary embedding mechanisms work simultaneously and that they create what can be called the "climate" of an organization. These are strongly related to consistency because it can cause confusion if the leader is not consistent in these six areas. Leaders are perceived as consistent at IKTG, but one topic that some informants mentioned was allocation of resources and how cluster managers may have to act according to what programs they have a chance to get funding from. So the third mechanism is the only one informants see as possibly not always being consistent.

Schein further presents six secondary articulation and reinforcement mechanisms:

- 1) organizational design and structure,
- 2) organizational systems and procedures,
- 3) rites and rituals of the organization,
- 4) design of physical space, facades, and buildings,
- 5) stories about important events and people, and
- 6) formal statements of organizational philosophy, creeds, and charters

The secondary articulation and reinforcement mechanisms have a different purpose depending on what developmental stage the organization is on, young, mature or growing (Schein 2004). I will classify IKTG as growing because the amount of members increased in the duration of this study. In growing organizations the last six mechanisms are secondary because they only work if they are consistent with the primary mechanisms. The artifacts (logo, slogan etc.) that were mentioned earlier in this section would be a part of these secondary mechanisms and we have seen that they correspond to the values the cluster is built on. But the need for consistency across these 12 mechanisms tells us something about the challenge of both creating and managing an organizational culture. This gives me the impression that trying to implement a culture based on values that are not your own would be a huge challenge, on the verge of impossible. The fact that the same values are visible in most aspects of IKTG and in the actions of the leaders, show that the leaders truly believe in them and have them internalized.

I think it is possible to view the introduction of a common culture and trying to get all members to internalize the values as a translation process. With the managers having these values internalized, practicing what they preach, and trying to convince others to do the same they work as change agents and place themselves as so-called gatekeepers. Trying to get others to live by the values can be considered a negotiation and translation process. This happens by them telling success stories, repeating the values, and last but not least, being examples for others to follow. In this process the consistency plays a role as members need to understand what they could gain by doing the same and how that could ultimately help them reach their own goals as well. Consistency in leaders is also important because this translation process is continuing. In order to maintain the common values and culture, managers need to keep being good examples and “negotiate” with others to act the same way. In the following I will look more into to what degree the members have actually internalized the values and possible reason for why there are different degrees of internalization.

#### **6.4.4 Different degrees of internalization**

So far we have seen that the leaders present a unified culture and a set of values to cluster members. They want all individuals to live by these values in order for the cluster to prosper. But throughout my research I realized that not all members have internalized the values to the

same degree. Tor-Arne explained that even though people agree with the values they may not live by them:

“It is easy to get people to accept the basic values, it is easy for them to accept the value in focusing on them. But it is not that easy to get them to act on it and think twice (...)” (Tor-Arne, interview 25/11-10, my translation from Norwegian)

Further he explains how managers want people to have the values in the back of their heads when they for example get the chance to make a statement to the press and give a diplomatic answer even though they are not happy about the specific situation. Even though members agree to the values they don't necessarily act on them and that indicates the values not being internalized in the members. As mentioned the informants located in the same environment as the managers gave an impression, in interviews, of believing and acting more on the values than those located further away. I mentioned that I think this is because they are closer to an ongoing translation process of introducing a common culture. In addition to the distance from management on an everyday basis, I believe the members' backgrounds or work situations can influence internalization.

I believe the translation process previously mentioned can be compared to the development of a culture from being espoused beliefs and values to becoming underlying assumptions (Schein 2004). In a translation process the managers are promoting the values as the best way to make the cluster strong and to provide positive effects for cluster members. If the translation is successful managers and members will agree on the values and possibly create a boundary object, for example the slogan. I will not go further into possible boundary objects in relation to culture but think it is important to mention that what Schein refers to as artifacts could possibly be boundary objects as well. In becoming underlying assumptions, beliefs and values need to prove themselves as successful over time and eventually become so taken for granted that you find little variation within a social unit (ibid). My impression of internalization depending on location is founded on the experiences from interviewing the informants and the impressions I was left with after having conducted and listened through all of the interviews (f. ex. M5 and M7).

The second factor that may influence to what degree the culture is internalized by members is a large difference between the values of the cluster and the values the members have related to their professional background or their workplace. Wanda J. Orlikowski (1992) describes a



similar situation where difficulty arose when management decided to implement Notes in an organization with a culture that did not correspond to the one built into the computer system. Informant M3 talked about how the culture in a firm could hinder openness and sharing:

“I think it has something to do with culture too. I think it has something to do with the corporate culture. There are some of the large, old firms that don’t have a culture for it. In the same way as young aspiring people come from the academic environments where they have learned the new tools and sharing of competence and sharing experiences and working virtually.” (informant M3, interview 21/9-10, my translation from Norwegian)

M3 believes that less training in sharing both through education and in organizations can be an obstacle when trying to get people to be open and share. The informants who found it the most difficult to share and/or to find the cluster useful are people who come from large organizations without a sharing culture (informant M3), are in an age group that conducted their education more than 15 years ago (f. ex. informant M3 and informant M8), and/or they are located away from Klosterøya in their daily lives (f. ex. informant M2 and informant M8). This points towards both co-location on a day-to-day basis and the values you have been taught having an impact on how easy it is to internalize the values presented by the cluster managers.

Another aspect that might be of interest is that especially the two informants who seemed to have internalized the values the least were also the ones who seemed to have the least ideas about what the cluster could provide them. We have seen that the cluster has an individual focus and wants to provide all members with positive experiences, new knowledge, and opportunities for cooperation. But for this to be possible you need to know what you are after. The cluster can arrange activities and create meeting places but not force you to become active. The managers can “bring the members to water, but not force them to drink”.

Terjesen (2010) also mentions that it is unrealistic to think that all members will internalize the values and the culture to the same extent. He compares the cluster to a congregation and just like in a religious community some members will have a stronger faith than even the leaders while other will be in doubt. But even though it might be unrealistic to get all members to internalize the values Tor-Arne seems to see the value in having members act according to them. So, even though it is not possible to convince all, there is good enough reason to try and convince as many as possible in order to make the cluster even stronger.

I have now looked at the culture and values that are the foundation for IKTG. In the following I will look at identity and whether this can be connected to motivation and the willingness to perform volunteer work. Both Torkild (interview 25/11-10) and Tor-Arne (interview 25/11-10) talked about a common identity. They are trying to create a “tribal feeling” within the cluster. In the following section I will look into the identity issue and see whether Boas Shamir’s (1991) theory about identity can help explain why so many people are willing to volunteer and perform cluster work.

### **6.4.5 Identity and motivation**

In the theory chapter I presented Shamir’s (1991) self-concept theory and how it relates identity and motivation. Shamir says that all people have more than one identity and that we organize our identities in a hierarchy where the highest ones have the greatest motivational significance. In this section I will see whether the theory can explain why people choose to perform cluster work without getting paid at IKTG.

Initially I thought Shamir’s (1991) theory would be able to explain the large enthusiasm and volunteer spirit at IKTG especially because the cluster fits with the situations Shamir’s theory is the most applicable for.

But even though both Torkild and Tor-Arne talk about the importance of creating an identity and getting people to talk about “us” when referring to the people involved in the cluster, the informants don’t give an impression of feeling this way. M3 has the impression that only a few people have the feeling of identity:

“I think it depends a lot on the person. It is mostly related to the people at the core there. My personal opinion is that this IKT Grenland, that feeling of being a part of IKT Grenland I think first and foremost is for those who work the most with it, for now.” (informant M3, interview 21/9-10, my translation from Norwegian)

With knowing that the cluster managers want a common identity, but that most members do not strongly identify themselves with IKTG, we understand that creating a common identity is a challenge. Looking to the documents also supports this impression. A high level of trust between actors is mentioned (Oxford Research AS 2011), but talk about an identity is nowhere to be found. By looking at these different types of material we can draw the conclusion that the sense of cluster identity is not that strong. This means that Shamir’s theory

cannot provide us with a good explanation. I think that the concepts of “translations” and “boundary objects” give a better understanding of the situation at IKTG. The concepts are dynamic and are therefore well suited to explain the processes in a dynamic structure like a cluster. Translations and boundary objects are not constant but they give people something to gather around. It helps bridge the gap between people with different backgrounds as they can all talk about them and relate them to their own goals. This gives them something in common, something they all understand and can relate to.

But without a common identity, what are the members’ motivations for attending meeting and conducting cluster work in their spare time? One of the things that is mentioned most in relation to why people attend meetings or are involved in the cluster is the network you can build and how nice it is to meet people from the same industry: “It is good for constructing network and there are many nice and good people.” (informant M4, interview 22/9-10, my translation from Norwegian). The professional aspect and that it is a place to learn is also important. Informant M5 has these two reasons for attending meetings: “First of all it is enormously interesting professionally and then secondly it is a nice meeting place. It is valuable. It is both formal and informal at the same time. I have learned something every time and met new people and find it very exciting.” (interview 23/9-10, my translation from Norwegian). We have also seen that people in manager positions often hope for business opportunities, and that they have a forum just for leaders which meets a few times a year. We know that the business side of things has a larger role in the strategy of the cluster now and that this is an area that will be in focus in the time ahead.

It is possible to also view the attempt to create a common identity as a translation process. Just like with the common culture the managers are the change agents. But as we see by looking at the presented material it is not going as well. My observations at the meetings suggest that during activities members might have more of that “tribal” feeling Terjesen (2010) also talks about. But interviews suggest that this may not stick. Through the weekly e-mail the managers seem to try and perform the negotiations needed for a translation process, but it might need more time or not be possible to do. But as mentioned the cluster may not need all individuals to have an identity related to the cluster. It may be sufficient that there are plenty of “boundary objects” that connect them and help them bridge the gaps between them.

In this section we have seen that even though Boas Shamir’s (1991) theory should theoretically fit IKTG identity doesn’t seem to play a big role in motivating individuals to

participate in the cluster. But cluster managers are trying to get both their values and identity across to members. Motivation for the people attending seems to be what they get in return. Even though there is no money involved they get such things as a larger network, business opportunities, and professional input. But it seems that cluster managers are aware of this and Tor-Arne explained how it was important for them to get to know the members as well as members getting to know each other because they could then learn what the different individuals were after and what could motivate them to do a certain job. But even though the sense of identity is not as strong as the managers would like, members seem to agree on the values the cluster is founded on.

This section looked closer at the topics of culture, identity, and motivation and we see that the values are important in the cluster and the members agree with them and feel that they truly come from the leaders. But still, the challenge ahead is to get people to act according to the values as well and have them become a part of who they are. Another aspect it can be interesting to mention is that the values presented by managers as the foundation for the cluster fit well with the cluster theory. Porter talks about flow of information, cooperation, etc. and we see that these are the same things which are promoted at IKTG. One of my conclusions is therefore that to have individuals who carry the values of being open, happy, and sharing is necessary for the success of a cluster like IKTG with the circumstances that surrounds it.

## **6.5 Summing up**

IKTG is located in a small region, which means that they need to think a little differently than clusters in larger regions. In this chapter we have seen that they decided to shift the focus from being concerned only with leaders to consider all individuals. I have showed how my empirical material points to the fact that for IKTG this has been essential in order to reach “critical mass” and become successful. But even with “enough” people attending activities there are challenges related to creating trust between the individuals and getting them to become active participants and not only receivers of information and knowledge. My material shows that the Thursday meeting has played an important role in overcoming both these challenges. Trust is created through people meeting and interacting and the meeting place provides them with opportunities to socialize and make new connections. The meetings also provide different options for people depending on their personal and/or professional interests.

This can help show people their options when it comes to participation and make them become more active. When looking at the individuals that make up the cluster I have also shown the importance of certain individuals in the foundation and maintenance of the cluster. Without specific individuals who believed in the idea IKTG would probably not exist today.

But the focus on individuals also means that the cluster consists of a range of different people who need to cooperate. I used the analytical concepts of translation and boundary objects (Leigh Star and Griesemer 1989) to explain the processes of making these people come together to pull in the same direction. These processes are ongoing and means that all members can feel like their personal goal(s) can be reached by participating. The boundary objects also give them something to gather around and help them communicate even if they come from different “social worlds”.

One of the translation processes is the creation of a common culture. I showed how any member of IKTG can be a change agent and create an obligatory point of passage, but Edgar H. Schein’s (2004) theory tells us that when it comes to culture it needs to originate in leaders or founders. At IKTG this is visible in that leaders represent certain values that they are basing the cluster and its culture on. It is important that the managers show consistency in their behavior. This shows that the values come from within and it also makes them good examples to the members. The values seem to be something most members agree on even though they have internalized them to different degrees. An interesting finding is that it seems the people located close to the cluster managers have a stronger internalization than those located further away. I also looked to a common identity as a source of motivation but this did not seem to be strongly internalized in the cluster members.

In the following I will now conclude this paper by looking to the main conclusions and also place the findings in a larger context.

# 7 Conclusion

This chapter sums up the research conducted for this master thesis. I will present a summary of the work that has been done, the findings from the empirical material, and conclusions. I will also show how my research places itself in relation to other research on the field and relevant literature. I also look at the study's contributions to the field and in the end I will present some possible directions for further research. I believe the research is of interest to more than the people involved in the work at IKTG and hopefully it provides insight also for other cluster managers, cluster members, policy makers, and others interested in cluster research.

## 7.1 Summary

The empirical material for this master thesis was collected over a period of time reaching from May 2010 until March 2011. Henrik Finsrud<sup>24</sup> presented the opportunity of researching IKT Grenland (IKTG) for a master thesis project in the spring of 2010. Further I had a preliminary conversation with Tor-Arne about possible topics for my research. The next step was conducting a total of 16 interviews, carrying out observations both at Klosterøya and Thursday meetings, studying documents, and participating at a cluster conference.

The fieldwork was conducted in trying to answer the following problem statement: How does IKTG's focus on individuals affect its very development in terms of forming a strong and robust cluster? I was particularly interested in looking at some of the (social and cultural) processes that are in motion in the very formation of the cluster. I focused on the development from when the cluster managers decided to focus on individuals, and the effects of that decision.

Throughout the research period I have come to realize that IKTG stands out from a lot of other clusters. First of all the Norwegian circumstances differ from those of a lot of other countries in that the population is spread out and there are not a lot of large urban areas. IKTG is located in a fairly small region, which again means that they have a limited amount of potential members. Therefore in 2006 cluster managers made the important decision to focus

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<sup>24</sup> A senior researcher at AFI (Arbeidsforskningsinstituttet) in Oslo

not only on leaders but also other individuals in member organizations. How this strategy affects the development of IKTG is the main topic for this thesis.

In the analysis I brought forward two large challenges: 1) reaching “critical mass”, both in participation and active members, and 2) creating trust between members. The first challenge has been overcome by the strategy to focus on individuals as this has brought more active participants. Cluster managers believe trust is created through people meeting and getting to know each other. The Thursday meetings are important arenas in overcoming both challenges as this is where most of the members interact with the cluster and where they can find interesting opportunities that appeal to them, both as professionals and as representatives for an organization.

By focusing on all the individuals in the member organizations the cluster now consists of a large variety of people and in order for them to cooperate and work together in the best interest of the cluster, they need to come together. In order to get a better understanding of the processes that happen in the individuals negotiating and reaching agreements I used the terms “translations” and “boundary objects” as presented by Leigh Star and Griesemer (1989). In the analysis I also showed how all members have the opportunity to be change agents and create obligatory points of passage. This is not the case when it comes to the creation of a common culture though. I pointed out in the analysis that the creation of a common culture can be seen as a translation process but that the values the culture is based on need to come from leaders and managers (Schein 2004). In this way I have brought together two sets of terms from different theoretical origin in order to provide a good understanding of the cultural processes at IKTG. The managers at IKTG have defiantly internalized the values and are “practicing as they preach”. This is an example of the importance of the managers. In general they are important as role models in the cluster as they are carriers of certain values, and are outgoing and committed to the cluster.

In the analysis I also suggested that being co-located strengthen the translation processes of internalizing both a common culture and a common identity. It seems that the people located at or close to Klosterøya have this internalized to a larger degree than those located further away. This could be because they have been closer to the translation process or they could have been attracted to the location because they find people who think like them there. The latter would suggest a type of self-reinforcing effect but I have not looked closely into this and it could be a topic for future research. In relation to co-location it is worth noting that at

the moment IKTG has started a partnership with two other clusters in Sweden/Denmark which could be a motivational factor towards looking into the opportunities of creating technological tools to aid a feeling of co-location despite being physically distributed.

In the following section I will present my main problem statement and the main conclusions I have drawn from my analysis of the empirical material presented in the analysis.

## 7.2 Conclusions and findings

The problem statement which has been the foundation for this thesis is:

**How does IKTG's focus on individuals affect its very development in terms of forming a strong and robust cluster?**

The problem statement has led me to look at the development from the decision to have this focus was made and up until today. One of the main conclusions is that the choice to see and recognize all individuals in the cluster has been essential for IKTG in becoming as successful as they have and it seems they would not have reached “critical mass” without it. The fact that the member mass has increased has a positive side effect in that it brings a larger variety of knowledge into the cluster. It is a challenge to satisfy the needs of such a differentiated group but that has been done by establishing a range of different forums that allows people with the same interests to meet and exchange knowledge and information. I see this as a positive and I believe it contributes to the desired self-reinforcing effect mentioned by Porter (1990). This large variety also means that IKTG's meeting places can take on the role of being a professional community that a lot of people don't have in the workplace seeing as there are a lot of small and medium sized businesses in Grenland's ICT industry.

Another important finding from the fieldwork is that it is possible for people with different backgrounds to cooperate. In explaining the processes that goes on in order for all the different individuals to pull in the same direction I use the analytical concepts “translations” and “boundary objects”. “Boundary objects” give the individuals something to gather around and relate to, all in their own personal way and in relation to their own goals. The translations and boundary objects are crucial for IKTG to work but I believe that these concepts are interesting to use when discussing all clusters. Clusters are all ultimately built up of people and their activities. I hope that the insight into what power active participation gives



individuals can be motivational for even more people to become active and engaged in cluster work.

Through my fieldwork I found that physical meetings between people serve an important function in relation to the translation processes. This is because people who know each other will be able to “negotiate” more easily, trust is created through people knowing each other, and the negotiations often happen in arenas where people meet. I hope that the insight into the importance of the individuals

But even though I discuss boundary objects that are stable and strong it is important to mention that boundary objects also need to be dynamic. Translation processes and the resulting boundary objects are not static elements that remain the same independently of their context. Translations are ongoing and the change agents, or gatekeepers, need to constantly negotiate with their allies. As a result the boundary objects are also subject to change. I believe this is one of the strengths of using these concepts when looking at cluster. The fact that they are dynamic supports the dynamic nature of clusters. The empirical material presented in this thesis show us that IKTG has changed over time according to both external and internal circumstances. I believe this is one of the strengths of the cluster. This is an organization where there’s not necessarily a mutually dependent relationship between the cluster and its members and therefore it needs to change according to the members’ wishes and needs. Throughout this paper I have made an argument to create strong and robust clusters but it is important to recognize that this does not mean a static cluster. A static cluster is a weak cluster, to be strong and robust means to be dynamic. I believe these conclusions are of interest to a wider audience than the participants at IKTG. The advantage in applying the concepts of “translations” and “boundary objects” when looking at clusters, can be interesting for others who want to perform cluster research. The need for a dynamic cluster is valuable insight for people involved in developing clusters, whether that is cluster managers or policy makers.

When looking at general conclusions I also want to point out the value in acknowledging the fact that clusters are ultimately made up of people. I believe it is important not to forget the individuals as they are the ones who make the decisions. A cluster is an organization where the relationship between the cluster and its members is looser and more undefined than in a traditional hierarchy. I believe that in order to use this loose structure to your advantage as a member or a manager, you need to understand some of the processes that happen within a

cluster. Even though the formal members are the organizations the people are the ones that interact. This thesis is an attempt to shed light on some of these processes in order to give cluster researcher a fuller picture of what a cluster is. To acknowledge individuals as an important element is a new way of thinking within the cluster research but I believe it is a good addition to the ideal type we already have. An ideal type is useful but if we also pay attention to the individuals we understand that all clusters are different.

I have now looked at some of the social processes that happen in a cluster but I also want to look at the creation of a common culture because that gives a cluster direction. I see the introduction and maintenance of the common culture as a translation process that needs to be initiated by leaders if it is going to stick. By looking to Edgar H. Schein's (2004) theory and the empirical material it becomes apparent that in order for the values the culture is based on to be internalized by members you need leaders who truly believe in them. The members and other observers at IKTG see that the managers live the values they are preaching. The manifestations of the culture, such as slogans, videos, logos etc., become visible reminders of the values and the culture that is the foundation in the cluster. The common culture and values as guidelines are important in uniting people and for them to know what the cluster stands for. The findings in relation to common cultures is interesting also in a more general context because having specific values that all participants can agree on gives the cluster direction. I imagine that without some guidelines a cluster would be useless and it would be difficult for people to relate to. Without knowing what the cluster stands for and wants it will also be difficult to see how it can be useful to you.

In addition to a common culture and common values, I believe this thesis shows the importance of a clear strategy. I have looked at the effects of one strategy chosen by one cluster but I believe I have made a point that is valuable to all people interested in cluster research or who are concerned with cluster development. A strategy gives direction and a sense of the purpose of the cluster. But as mentioned in relation to boundary objects, translations processes, and the cluster in itself, a strategy should not be static. It should be possible to change according to the situation.

In having summed up the most important findings and conclusions I will now turn to other literature and shortly describe how my research places itself in comparison.

## **7.3 Where does this research stand in relation to other literature?**

In chapter 2 I presented cluster research, research performed at IKTG, and studies concerning Norwegian circumstances. Throughout the research period I have not been able to locate any studies similar to mine and this has also been confirmed by several informants. Most cluster research has focused on industries, firms, and nations. Except for a few studies mentioning the importance of leaders, individuals are not mentioned as anything other than a resource.

With this research I have shed light on an aspect of clusters which has not been brought attention to before. I want to show how this has been one of the major success factors for IKTG but also that it has caused challenges. I think it is important to point out that there is not one strategy that fits all clusters and also to show the importance of dedicated and “hungry” individuals in the creation of a cluster organization. The founders of IKTG didn’t even know what a cluster was when they started (personal communication with Tor-Arne) but they knew that they wanted to connect the ICT people in the region in order to build something. That type of commitment might be something policy makers should look for when deciding what regions and businesses are ready to launch a similar initiative. By having this focus I also provide insight into processes that happen in all clusters as people always will have different goals and differences of opinion. In the following I will shortly describe what I believe are the main contributions of this research.

## **7.4 Contributions**

With my contribution I want to show aspects which are important in order to understand and build clusters. I have done this through theoretical and empirical material generated through fieldwork. Through this I point to a shortcoming in cluster research. By doing this I give a broader picture of what a cluster entails.

I’m aware that Porter (1990) has looked at large clusters and has a larger material, and that makes it difficult to include individuals. But I have looked at IKTG’s strategy and talked to many people. That too is an important contribution.

I believe that it is a mistake to overlook the individuals within the cluster discussion the way it has been done until now. They are affected by what is going on in the industries and regions

and by letting them become active you might be looking at a whole new group of people who are eager to push the cluster to grow and prosper. I have also previously pointed out several reasons for why individuals should be considered. But within a cluster there is not much hierarchy and to understand how participants interact in order to still function as a unit can be of interest to people involved in clusters one way or another.

The purpose of this research has not been to criticize existing cluster theory but to add another dimension. In order to say that we understand the type of structure a cluster is, I think we also need to understand some of the processes that happen and recognize that decisions and actions are taken by people.

Reve and Jakobsen (2001) make a pretty clear argument and urges Norway to move towards the knowledge-based economy. They state that Norway has been dependent on natural resources but that needs to change unless we want to lower our standard of living. My research presents a region that has managed the change from relying on industry alone to now also having a large ICT business that keeps on growing (IKT Grenland 2010 b). Klosterøya which used to be an industrial plant is now home to more than 70 firms employing more than 350 people (Klosterøya AS 2011). Grenland is an example of a region that has made it through the transition and the cluster may have played a part here. And it seems that to let all individuals interested in doing good for the region get involved, has been a wise decision. The employees in the firms and other organizations are the ones who give the region that competitive advantage and to give them a place to develop their professional interests is important, and to be a part of a larger network of people with similar interest may be inspiring.

After having conducted this research I am left with the impression that a cluster is a structure which all participants can influence. A cluster is supposed to exist in the best interest of the members and the people who choose to be active. In that way a cluster is very democratic. By giving more (time, knowledge etc.) you will most often also get more in return, even though there is no guarantee. You need to find allies within the member mass and use your influential power to alter the cluster to best suit your wants and needs. I have also realized the importance of the cluster managers and the cluster organization. When Porter, for example, discusses clusters he refers to the whole industrial environment and not an organization with a set of managers and a structure. But this research has showed how important these managers are in bringing people together and organizing the cluster, its activities, and values. The

become a focal point in the cluster and I believe they display the importance of individuals and true commitment.

I also believe clusters can play an important role in Norway's development into the knowledge-intensive industries. But I don't think the solution is to create clusters and then all will fall into place. I think IKTG is a good example of the importance of eager and committed individuals and the value they represent in cluster development.

In the following I will look to possible future research and say something about how my research possibly can be an inspiration to other scholars.

## **7.5 Future research**

After having finished the research for this master thesis several possible directions for future research stands out to me. The first and probably most obvious is that it would be interesting to see more researchers looking at the individual participants in clusters to find out more about why they get involved or choose not to. I was not able to find any clear answers as to what exactly motivates the people involved with IKTG other than that a clear identity in relation to the cluster is not apparent. This could be an interesting topic for future research and I'm sure it would be of huge interest to cluster managers.

Throughout this research I have noticed that technology does not play an important part for IKTG. They use e-mail and social networks as a way of communicating information to the members and I have also mentioned them as tools for translation and culture carriers. I think a very interesting topic for future research could be whether a CSCW (computer-supported cooperative work) system or other technological tools could play a role in bridging the gap between the people who are physically distributed. IKTG has recently gone into a more official cooperation with two clusters in Sweden/Denmark which means that all cluster services these three provide will be open to members of all three clusters (e-mail 15/6-11). Informant M11 pointed out how expensive travel can be and I see possibilities with using technology to make the clusters come closer.

The cluster members will not only be physically distributed but also often interact at different times. It could therefore be of interest to look at tools that support synchronous distributed interaction and asynchronous distributed interaction (Ellis, Gibbs et al. 1991).

In addition to looking at new systems I find the use of existing platforms interesting. How could the possibilities within social networking be used to create stronger bonds between cluster members? Could these networks be arenas for translation work? How could online discussion forums be used?

It could be interesting to find out more about what is needed in order to reach critical mass and what effect any type of groupware system could have. But as I pointed out in the analysis, knowledge about the users is crucial in the development and implementation of groupware (Luff and Heath 1998; Kristoffersen and Ljungberg 1999). This research could possibly inspire other research on this topic.

The final aspect for future research I would like to mention is the influence of the financial programs. IKTG differs from a lot of other Norwegian cluster initiatives in that there was already a project started before they entered the Arena program and that there was some money already in place. In my research I have not gone into the rules, regulations, and options that are presented to cluster organizations when entering the program but it could be interesting to see more research on what the success factors are but also what the reasons have been when projects have not had a positive result. It is clear that the Arena program has been important to IKTG as it gave them more financial elbowroom. But in order to learn what works and what does not it could be interesting to see both evaluations of the public programs, but also of factors of success and failure.

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# Appendix

## Forespørsel om å delta i intervju i forbindelse med en masteroppgave

Jeg, Helene Wiborg, er masterstudent ved Institutt for Informatikk ved Universitetet i Oslo på programmet Teknologi, Organisasjon og Læring og holder på med den avsluttende masteroppgaven. Min studie vil ha fokus på IKT Grenland (IKTG), en næringsklynge med hovedsete i Skien og hvordan man kan motivere individer til deltagelse i klyngen. Jeg håper å kunne si noe om hvordan man kan legge til rette for mer deltagelse og hvordan man kan gjøre klyngen sterkere og mer robust.

Som datagrunnlag for dette ønsker jeg å gjennomføre 8-12 intervjuer med medlemmer i IKTG og styremedlemmer, i tillegg til observasjon og dokumentanalyse. Intervjuene vil blant annet ta for seg hvordan individene deltar, hvilke elementer som skaper bånd mellom individene og klyngen og hvordan man fremover bør jobbe for å skape en enda større forankring av klyngen. Dette vil belyses gjennom deltagerens meninger, erfaringer og kommentarer.

Jeg vil bruke båndopptaker og ta notater mens vi snakker sammen. Intervjuet vil ta omtrent 45 minutter, og vi blir sammen enige om tid og sted.

I forbindelse med observasjoner og dokumentanalyse vil det ikke bli registrert opplysninger om enkeltpersoner. Observasjonene vil foregå på IKTG medlemsmøter og i deres lokaler. Dokumentanalysen vil omhandle Arena søknader, evalueringer og andre dokumenter om klyngens strategi osv.

Det er frivillig å være med og du har mulighet til å trekke deg når som helst underveis, uten å måtte begrunne dette nærmere. Dersom du trekker deg vil alle innsamlede data om deg bli anonymisert. Opplysningene vil bli behandlet konfidensielt, og ingen enkeltpersoner vil kunne gjenkjennes i den ferdige oppgaven. Opplysningene anonymiseres og opptakene slettes når oppgaven er ferdig, innen utgangen av 2011.

Hvis det er noe du lurer på kan du ringe meg på 977 77 717, eller sende en e-post til [hwiborg@gmail.com](mailto:hwiborg@gmail.com). Du kan også kontakte min veileder Sisse Finken ved Instituttet for Informatikk på telefonnummer 22 84 06 43.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste A/S.

OSLO, 15/6-2010

Helene Wiborg

Master student, Inst. For Informatikk

## **Intervjuguide, medlemmer i IKT Grenland**

Navn

Arbeidsoppgaver/fagområde

Kan du fortelle om din tilknytning til IKT Grenland?

Aktiviteter

Hvilke har du deltatt på? Hva fikk du ut av det?

Hvorfor kommer du/kommer du ikke igjen?

Hvilke aktiviteter føler du at du får mest utbytte av? Hva slags utbytte?

Motivasjon (hva får du ut av å være med)

Hva var din motivasjon for å bli med i klyngen?

Hva motiverer deg til fortsatt å være med?

Har du opplevd en forandring i egen/andres motivasjon over tid?

Kunnskapsdeling

Hva er kunnskapsdeling for deg?

Kan du fortelle om en situasjon hvor du har delt kunnskap?

Hva tror du man kan få ut av kunnskapsdeling?

Har du kontakt med andre medlemmer utenfor aktiviteter i regi av IKTG?

Nettverk

Hvor viktig er nettverk for deg?

På hvilken måte har medlemskapet i IKTG påvirket ditt profesjonelle/personlige nettverk?

## Teknologi

Hvilken bruk av teknologi finnes i IKTG?

Får du støtte for deltagelse i bedriften du jobber?

Er det flere fra bedriften som deltar?

På hvilken måte blir dere/blir dere ikke oppfordret til å delta i klyngeaktiviteter?

## Ideologi og struktur

Hva tror du er det overordnede målet til IKTG?

Hvordan er klyngen strukturert?

## **Intervjuguide, ledere i IKT Grenland**

Navn

Arbeidsoppgaver/fagområde

Hvorfor ønsket du i utgangspunktet å engasjere deg i klyngen?

Har motivasjonsfaktorer endret seg over tid?

### **Organisasjonsstruktur**

Hvordan er strukturen i klyngen?

Hva skal denne struktureringen understøtte?

Hva tror du holder klyngen sammen?

Hvilken støtte tror du individene har for deltagelse hos sine respektive bedriftsledere?

### **Ideologi**

Hva er det overordnede målet til klyngen?

Kan du forklare bakgrunnen for å starte IKTG?

Hva ønsker man å oppnå? Noe som kan måles?

### **Aktiviteter**

Hvilke finnes?

Hvor mange deltar?

Hva er målet med aktivitetene?

### **Motivasjon**

Hva gjør man for å skape motivasjon?

Hvilken grad av motivasjon er målet?

Kan man måle motivasjon?

Har motivasjonen endret seg over tid? (etter å ha sett resultater el. l.)

### Kunnskapsdeling

Hva vil dette si for deg?

Hvilken grad av kunnskapsdeling er målet?

Hvordan legges det til rette for kunnskapsdeling?

Har du et konkret eksempel hvor kunnskapsdeling/samarbeid har ført til inntjening for medlemsbedriftene?

Hvordan påvirker bedriftskonkurranse kunnskapsdelingen?

### Teknologi

Hvordan brukes teknologi i klyngen?

## **Intervjuguide, oppfølging**

Har det skjedd noe nytt i klyngearbeidet siden forrige intervju?

Å ha oppnådd kritisk masse i klyngen, hva vil det si for deg?

På møter

I klyngeinitiativet generelt

Hvordan jobber dere med å oppnå tillit mellom medlemmene/deltakerne?

Hvordan tenker dere rundt strategiutvikling?

Hvilke hensyn tas?

## **Teknologi**

Hvilke valg gjøres i forbindelse med teknologien? Og hvordan tas de valgene?

Er det planer om å endre noe i den teknologiske plattformen eller skal det komme noe nytt?

Hvilken rolle spiller teknologien?

Hvilke erfaringer har dere med bruk av teknologi? Hvilke virkninger gir den?

Hva kan teknologien støtte opp om i klynge (i forhold til individet)?

Translasjoner?

## **Intervjuguide informant M12**

Kan du si noe om din erfaring med og kjennskap til klynger og begrepet generelt?

- Skiller IKT Grenland seg ut fra andre IKT klynger / næringsklynger generelt?

Vet du om noen studier av IKT klynger i Norge? Hva var i så fall temaet for disse?

Klyngebegrepet i IKT bransjen

- Brukes det? Hvordan brukes det?
- Hvordan snakker man om klynger?
- Er dette noe man er opptatt av å utvikle videre?
- Hvordan starter typisk et klyngeinitiativ?

Hvordan har IKT bransjen utviklet seg de siste 10 årene?

- Dette er en bransje hvor ting forandrer seg fort og min erfaring fra å ha vært med hos IKT Grenland i omtrent et år er at ting er veldig dynamisk og endres fort.

Du nevnte i e-posten at dere mener at geografisk nærhet ikke er så viktig i deres bransje, kan du gi et eksempel på dette?

- Hvorfor tror du IKT bransjen skiller seg fra andre på dette feltet?
- Tror du ikke at IKT bedrifter også trenger nærhet til kunder for eksempel?
- Hvor viktig tror du det fysiske møtet er i en klynge?

Individet

- Når man snakker om bransjen, snakker man da om individet eller ser man på ting i et større perspektiv (bedrift for eksempel)?

Tillit

- Hvor viktig er tillit i en klynge/IKT bedrift?

Åpenhet

- Er bransjen blitt mer åpen de siste årene?